The American Journal of Pharmaceutical .... Education ....

THE OFFICIAL PUBLICATION OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY.

Volume IV *October, 1940* *Number 4*

INSTITUTIONS HOLDING MEMBERSHIP IN THE ASSOCIATION

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Howard University, College of Pharmacy, Washington; Chauncey I. Cooper, Acting Dean (1926).

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Indianapolis College of Pharmacy, Indianapolis, Edward H. Niles, Dean (1921).
Purdue University, School of Pharmacy, Lafayette; Charles B. Jordan, Dean (1901).

IOWA
State University of Iowa, College of Pharmacy, Iowa City; Rudolph A. Kuever, Dean (1901).

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University of Kansas, School of Pharmacy, Lawrence; J. Allen Reese, Dean (1900).

KENTUCKY
Louisville College of Pharmacy, Louisville; Gordon L. Curry, Dean (1900).

LOUISIANA
Loyola University, New Orleans College of Pharmacy, New Orleans; John P. McCloskey, Dean (1921).
Xavier University, College of Pharmacy, New Orleans; Lawrence F. Ferring, Dean (1938)

MARYLAND
University of Maryland, School of Pharmacy, Baltimore; Andrew G. DuMez, Dean (1900).

MASSACHUSETTS
Massachusetts College of Pharmacy, Boston; Howard C. Newton, Dean (1900).

MICHIGAN
University of Michigan, College of Pharmacy, Ann Arbor; Howard B. Lewis, Director (1900).
Detroit Institute of Technology, College of Pharmacy and Chemistry, Detroit; Esten P. Stout, Dean (1938).
Wayne University, College of Pharmacy, Detroit; Roland T. Lakey, Dean (1925).
Ferris Institute, College of Pharmacy, Big Rapids; Simon Benson, Dean (1938).

MINNESOTA
University of Minnesota, College of Pharmacy, Minneapolis; Charles H. Rogers, Dean (1901).

MISSISSIPPI
University of Mississippi, School of Pharmacy, Oxford; Elmer L. Hammond, Dean (1913).

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State University of Montana, School of Pharmacy, Missoula; Charles E. F. Mollett, Dean (1917).

NEBRASKA
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University of Nebraska, College of Pharmacy, Lincoln; Rufus A. Lyman, Dean (1913).

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Rutgers University, The State University of New Jersey, New Jersey College of Pharmacy, Newark; Ernest Little, Dean (1923).

*Denotes year institution was admitted to the Association

THE AMERICAN JOURNAL

-- OF --

PHARMACEUTICAL EDUCATION

Volume IV ***October, 1940*** ***Number 4***

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Published quarterly by the American Association of Colleges of Pharmacy at Lincoln, Nebraska. (Claflin Printing Company). Subscription price $2.00. Single copies 50 cents. Entered as second class matter July 1, 1937 at the postoffice at Lincoln, Nebraska under the Act of August 24, 1912.

Editorial Office: College of Pharmacy, University of Nebraska, Lincoln, Nebraska. Address all communications to the Editor.

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The American Journal of Pharmaceutical Education

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NOTICE

Program of the Pharmacy Section of the American Association for the Advancement of Science

The next meeting of the Association will be held in Philadelphia during the week, December 27, 1940 to January 2, 1941. The program committee of the Pharmacy Section is planning for two sessions to be held in the morning and afternoon of Saturday, December 28 at the Bellevue-Stratford Hotel. Scientific workers in the pharmaceutical sciences are invited to participate in the program. Those who wish to present papers are requested to submit titles to the Chairman of the Section at an early date.

Glenn L. Jenkins, Chairman,
University of Minnesota, Minneapolis.

BOOK AND JOURNAL EXCHANGE

The library of the Creighton College of Pharmacy would like to secure the following journals; Proceedings of A. Ph. A.—1851, 1852, 1853, 1854, 1856, 1859, 1881, 1910, 1911; Yearbook of A. Ph. A.—1913, 1918, 1920, 1921, 1922, 1930, 1933. Journal of A. Ph. A., Vol I, 1912 (Feb. March, April, May, June, Nov., Dec.); Vol. II, 1913 (Jan., Feb., March, April, May, July, Aug., Sept., Nov., Dec.,); Vol. III, 1914 (Aug., Sept., Nov.); Vol. IV, 1915 (March, May, June, Aug.); Vol. V, 1916 (Sept.); Vol. VI, 1917 (Feb.); Vol. VII, 1918 (May, Nov., Dec.); Vol. VIII, 1919 (Feb.); Vol. XIII, 1924 (Dec.); Vol. XIV, 1925 (July); Vol. XV, 1926 (Oct., Dec.); Vol. XVI, 1927 (Feb.).

In exchange for the above they offer duplicates of the following:

Proceedings of A. Ph. A.—1855, 1880, 1890, 1906, 1909: Yearbook of A. Ph. A.—1923; Journal of A. Ph. A.—Vol. II, 1913 (June); Vol. VI—1917 (April, Aug.,); Vol. XI, 1922 (Sept.); Vol. XII, 1923 (May, Nov., Dec.); Vol. XIII, 1924 (Jan., Feb.); Vol. XVII, 1928 (July); Vol. XX, 1931 (July, Aug., Sept., Oct., Nov., Dec.); Vol. XXI, 1932 (Jan., Feb., March, April, May, June, July, Aug.). Write Creighton College direct.

Those wishing books and journals or have them for exchange,—address the Editor.

NEW COMMITTEE APPOINTMENTS

Carson G. Frailey, Jr.,—Committee on Status of Pharmacists in the Government Service.

Lynn S. Blake, Chairman,—Committee on Relations of Boards and Colleges, District No. 3.

Edward Kremers, Scholar, Educator, Teacher, Friend*

CHARLES H. ROGERS
College of Pharmacy, University of Minnesota

It is splendid to live so truly
That long after life is gone,
The things you have done are remembered
And recounted under the sun.
But life is the time when we value
These tokens of friendship so dear,
And that is the feeling which prompted
This gathering of friends, far and near.

We have come together this evening to honor our distinguished guest, and to bring testimony of our grateful appreciation for his myriad contributions, both informational and inspirational, accomplished by lifelong and unselfish devotion to a profession of which we are justly proud. We who are present, Dr. Kremers, represent thousands of professional men, scientists, scholars, teachers, and friends who are unable to join us in expressing respect, esteem, and affection for you.

University professors, and especially deans, are always at a disadvantage when they make an address because irrespective of their limited oratorical abilities, they are expected not only to make a scholarly presentation but also to dispense a sparkling brand of humor from a stock which is usually sadly depleted. This time I will not presume upon your good nature by what I fear would be a feeble attempt to be facetious. Instead, I would like to talk to you for a few minutes about the effect that our honor guest has had upon pharmaceutical affairs for nearly sixty years.

In the biographies of Dr. Kremers that I have read, I can find no reference to his being a particularly precocious child. Apparently, he was quite a normal boy who reacted to the usual pleasures of childhood and responded to the fine home influences that were part of his heritage. After a brief sojourn in the East, he returned to the university of his native state and there, under the inspirational influence and leader-

*Read at the testimonial dinner in honor of Dr. Edward Kremers at the University of Wisconsin, April 4, 1940.

ship of Dr. F. B. Powers, his inherent abilities rapidly became evident. Now and then during his professional implementation he had had the opportunity to momentarily get a glimpse of the vast unexplored field of pharmacy and, appreciating that all professions are evaluated by the public, first, upon the professional services rendered to society by their practitioners and, secondly, by the contributions made by researchers in their particular field, he set about preparing himself to be the master of the situation, no matter what the emergency. It was his good fortune to study with such world famous scientists as Professors Wallach, Kekule, Strassburger, and Schimper at Bonn and Gottingen. These associations stimulated his inquiring nature to efforts to further augment our scientific knowledge and, possibly because he realized that his natural aptitude for such work gave him unusual opportunity to make it both vocational and avocational, he devoted himself so assiduously to research that he soon became an authority on the chemistry of volatile oils. The scope of his personal investigations has been large, but in the researches of all who have studied under him, he must be credited with being the parent motivating power. If sixty years ago pharmacy had had twenty-five more Kremers, it might now be better established in lay and sister professional minds as the really great science that it is. We honor you, Dr. Kremers, for all that you have given through your researches, to us, to our profession, and to mankind.

Dr. Oswald Schreiner, in his biographical sketch of Dr. Kremers in American contemporaries, has said or implied that undergraduate students first learn perhaps to fear him and then to revere him. It is easily understandable how all students would revere Dr. Kremers but if any of them feared him, it must have been those who did not know their lessons and were trying to "bluff" their way through their recitations. Intolerant only of intolerance, abominating veneer and superficiality, a declared antagonist to unsound, unreliable information, Dr. Kremers has been feared but always respected by others than undergraduate students. On the other hand, he has been kind and considerate to those who, acknowledging their mistakes, profited by them. Applying to others the same yardstick that he used in measuring his own efforts, he placed a premium upon ability, reasoning power, thoroughness, and hard work. Dr. Kremers has always given boun-

tifully of his vast knowledge to those who wanted to learn. A sympathetic understanding of student problems, combined with a capacity for clearly imparting his knowledge, has made him one of the great teachers in his field. Even though he had established himself as an unusually efficient teacher, it was not until 1899 that, succeeding Dr. Powers as Director of the Course in Pharmacy at the University of Wisconsin, he had the opportunity of putting into effect those educational ideals of which he had been an ardent proponent for so long. To be an outstanding educator is not always concomitant with being a great teacher but, in his case, this was soon established as a fact. No one was ever in doubt as to just where Professor Kremers stood on an educational problem and the same sound judgment that he used in his researches was always the basis for the expression of an opinion or stand upon a principle. Dr. Kremers' influence as an educator began to make itself felt as early as 1900. Up to that time the history of pharmaceutical education had been very much like the history of any other of the health sciences; medicine, dentistry, or nursing. Even though in each instance the profession had long been practiced upon a much higher plane than the educational requirements indicated, that year marked the first concerted effort to promote the interest of pharmaceutical education. In that year there were in the United States forty-four schools and colleges of pharmacy, all with independent curricula, with courses ranging in length from six months to two years and with the candidate receiving, upon graduation, a title or degree chosen by the individual institution.

Realizing the desperate need for coordination in admission requirements, teaching and laboratory methods, length of course necessary for graduation with a certain title or degree, on May 8, 1900, delegates from schools, colleges, and departments representing twenty-one institutions, met at the Jefferson Hotel in Richmond, Virginia, to form the American Conference of Pharmaceutical Faculties. Of these twenty-one schools, charter members of the conference, only four were connected with state universities: Wisconsin, Ohio, Michigan, and Kansas. This was just one of the many times that Wisconsin beat Minnesota to the draw because we were not represented at this first meeting for the very excellent reason that no invitation was tendered our faculty. At the first

meeting of the Conference, Dr. Kremers served as a member of the Committee on Organization and was elected a member of the Executive Committee. From vice-president of the Conference during its second year, Dr. Kremers was elevated to the presidency in 1902. On August 3, 1903, he delivered his presidential address before the Convention meeting in Mackinac Island, Michigan. As evidence of his wisdom and thought, often far in advance of his time, permit me to quote a few passages from his scholarly message. In commenting upon the position that state universities held in the higher educational system of this country and at which pharmacy had not flourished numerically, he said: "Criticism upon these institutions will be made easy by claiming that they were too far ahead of the prevalent educational standard of American pharmacy. It is true that whereas the state university should always lead the educational forces of its geographic limits, it should not be too far in advance so as to lose touch with its constituency. On the other hand, it may safely be asserted that no university can successfully conduct any course, be it in pharmacy or anything else, that falls much below the general college courses and keep the students in touch with the general student body on the campus. Those universities, which have attracted large numbers of pharmacy students have not merely adopted a lower educational standard, but they have isolated the pharmacy student from the academic student by a distance of miles, and thereby have reduced to practically nothing the advantages to be derived from being a part of a large university. The self-respecting pharmacy student either insists on being the social and approximately the intellectual equal of the academic student or he will go where he need not be ashamed of being a pharmacy student.

"No one step in the development of American pharmaceutical education has been more pregnant of good results than the one taken by some of our state universities within the last decade when they offered courses of like educational value to those leading to the bachelor's degree at our best colleges and universities. Though the number of students pursuing such a course is but very small, the existence of such courses has worked miracles in the social improvement of all pharmacy students on the university campus." State universities accepted his challenge and now a large percentage of

schools of pharmacy holding membership in the American Association of Colleges of Pharmacy are integral parts of state or nationally recognized endowed universities.

A firm disciple of a broader, more cultural education for students of pharmacy, Dr. Kremers pointed out the responsibilities that state universities had in offering comprehensive implemental training and threw down the glove to leading pharmaceutical educators of that day. He said: "The truth of the situation is this, that the state university has higher obligations than to educate the largest possible number of pharmacists. It is not so important that she should send out her graduates with a large amount of immediately available knowledge but rather with the capacity to become masters of the situation, no matter what the emergency.

Let me, therefore, make an earnest plea for the cultivation of the cultural phases of the pharmaceutical courses of study as opposed to the more apparent technical phases. Innumerable are the points at which pharmacy comes in contact with the history of civilization, with the evolution of historical man."

I wish I might tell you that with the organization of the American Conference of Pharmaceutical Faculties, pharmaceutical education came into its own. Unfortunately, nothing of this kind happened. It was a long and sometimes a very discouraging experience but I can say, from that time, the trend was always upward.

I won't worry you with details. I will mention only the most outstanding results. This small group of forward-looking educators, which included our distinguished guest among its outstanding members, was able to coordinate and stabilize educational standards and it did influence the teaching methods of member schools but despite these facts it was soon realized that there must be some force stronger than an educational one to regulate pharmaceutical instruction and practice.

These men turned to two already well established and influential organizations. On the one hand, they approached the state pharmaceutical associations for aid in awakening a feeling of pride in the profession and in creating a desire to support the efforts of the educational group and, on the other, the state boards of pharmacy for the actual fixing of scholastic requirements. With the aid of these two powerful groups, particularly the National Association of Boards of Pharmacy, in

most states they have been able to effect legislation governing pharmaceutical education, that in 1900, even the most optimistic member of the Conference would have considered impossible.

The first educational victory was the requirement that all entrants must be high school graduates. Then the length of course was regulated: first, three years; then four years, until, since 1932, thanks largely to the activities of the National Association of Boards of Pharmacy, in practically all states, an applicant for registration as a practicing pharmacist must be a high school graduate, must have had at least one year of practical experience, and must be a graduate of a four-year course in an accredited college of pharmacy.

In 1925 the American Conference of Pharmaceutical Faculties was reorganized and the name American Association of Colleges of Pharmacy was adopted. For some time, the scientifically and intellectually well prepared progeny of Dr. Kremers had been making such outstanding contributions to the attainment of high ideals and the extension of the sphere of influence of the Association that, when it was recognized as the accrediting agency for all colleges of pharmacy, they were deserving of the credit that was accorded them for their part in this accomplishment. It was not until 1932 that the American Association of Colleges of Pharmacy, the National Association of Boards of Pharmacy, and the American Pharmaceutical Association organized and sponsored the official independent accrediting agency, viz., the American Council on Pharmaceutical Education. This body has and will continue to be a constructive influence in a pharmaceutical educational development which, if it ever attains its goal, will be evidenced by a perfect pharmaceutical service to physicians and the public. Though far from such a Utopian state, what pharmacy has accomplished would not have been possible had not the seeds of wisdom, sown many years ago and nurtured through the ensuing years by Dr. Kremers and his coworkers, strengthening here, weeding there, continued to bear fruit; fruit adjudged as to quality and quantity by its altruistic size and scope, its life-saving succulence and its permanence in benefiting the society of succeeding generations.

It could easily have been understandable if Dr. Kremers, whose life had been so replete with accomplishment, had insisted upon a rest when in 1935 he retired from his duties as

administrative head of the course in pharmacy. Such, however, was not the case. A few moments ago I mentioned that Dr. Kremers' work was not only his vocation but his avocation as well and, having in his characteristic unostentatious manner dedicated his life to pharmacy, he welcomed the opportunity to serve his profession by accepting an appointment to the Wisconsin State Board of Pharmacy. A number of comments, all good, about his state board examination questions, have come to my ears. If one studies them, (and I, personally, have never been favored with a preview), he will find that each one is formulated in such a manner that a correct answer will show not only quantity of information possessed by the candidate but also his capacity for integrating the facts to form a conclusion. As he once stated,† "The object of a state board examination is not to ascertain how many facts the candidate has memorized, but to find out whether he 'is safe'." Ladies and gentlemen, I have no fear in making the unequivocal statement that any pharmacist bearing Dr. Kremers' stamp of approval can fill any prescription for me or my family. The people of the state of Wisconsin are indeed fortunate to have such a clear-thinking, discerning, exacting, far-sighted, sympathetic, kindly man as one of the guardians of their health.

To recount, in the few minutes given me, all of the honors that have rightfully come to this man through the ensuing years, would indeed be impossible. All of them, from the least to the greatest, have been justly deserved. To what he has done, most of us would not even presume to aspire but, notwithstanding, we have profited by the privilege of knowing him. Greater praise than we can find words to express belongs to this man whose life has been founded on the faith that men are ennobled by understanding, whose life has been dedicated to the advancement of education and the search for truth, and whose life has been devoted to the instruction of youth and to the service of the State.

I could not conclude my remarks without paying my respects to one who for nearly fifty years has been the true help meet of the master—Mrs. Laura Haase Kremers. Your great privilege of contributing sympathy, understanding, and en-

†Examinations in Chemistry. Journal of American Pharmaceutical Association, September, 1938, Vol. XXVII, No. 9, P. 795.

couragement, must surely have made for a life full to overflowing with pride and satisfaction. We honor and salute you, Madame, for the inspiration and love which you have given him and which he has metamorphosed in such a masterful manner as to make the world a more enlightened place in which to live and work. To you both

We seek in prayerful words, dear friends,
Our hearts' true wish to send you.
That you may know that, far and near,
Our loving thoughts attend you.

We cannot find a truer word
Nor fonder to caress you.
Nor song, nor poem we have heard
Is sweeter than, God Bless You.

A Continuing Program of Education for Pharmacists*

ROBERT C. WILSON
School of Pharmacy, University of Georgia

On the occasion of your annual meeting here at Old Greenbrier last year, Dr. Robert L. Swain addressed you on the subject, "The Drug Industry's Stake in Pharmaceutical Education," giving you some facts and figures in connection with the developments in pharmaceutical education in recent years and pointed out its significance to the entire drug industry. Your President of last year as well as your Executive Vice President also introduced the topic of pharmaceutical education and commended the program now well underway. I take it therefore that you have given some thought to this subject and are interested in it.

At this time it seems proper and to the advantage of all interests directly and indirectly related to the practice of pharmacy to consider some of the background in the establishment of the present plan for pharmaceutical education and to point out if possible the importance of maintaining it on a progressive and ever widening basis to the end that it may be made a continuing process.

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*Read before the annual convention of the National Wholesale Druggists' Association at White Sulphur Springs, West Virginia, October 1, 1940.

Colleges of pharmacy were established and are now maintained primarily for the training of men and women for the operation of retail drug stores. For many years the curriculum covered a period of only two or three years but under this time limit it was not possible for the college of pharmacy to include in this two-year curriculum more than those items which were distinctly technical in nature. There was no opportunity for the inclusion of the strictly cultural subjects nor for the inclusion of many of the increasingly important phases of chemistry, physics or biology. Operating under such a curriculum, we could not claim for pharmacy full professional status as judged by the standards prevailing in medicine, dentistry, veterinary medicine, and other professional fields nor could a research program be developed.

There were some factors which confronted institutions operating colleges of pharmacy in state supported universities as well as in the independently endowed institutions which should be borne in mind in a consideration of the development of the present program of pharmaceutical education which represents the joint efforts of the colleges and the boards of pharmacy.

1. The executives of the educational institutions did not look with favor on short-term courses and were not interested in providing budgets for the proper maintenance of the colleges of pharmacy on a basis comparable to law, medicine, journalism, agriculture, veterinary medicine, dentistry, *etc.*, all of which were on a four-year basis or more.

2. The faculty members of these universities who had a part in the training of pharmacy students could not develop the same interest in these two-year students of pharmacy, that they had in the other groups of students who were in the institution for a minimum period of four years.

3. The students in the schools of pharmacy could not feel that they were definitely a part of the student body of the institution since they were not accorded full student privileges extended to all four-year students, and, hence were demanding opportunity for full university recognition. This fact militated against the choice of pharmacy as a career by many ambitious and very desirable young men and women.

4. Members of other professions were not recognizing pharmacy as a profession due to the fact that they viewed the period of training as far too short in which to inculcate

professional ideals and perspectives. The period of professional education through which a person passes has come to be the yardstick for measuring professional, social and business possibilities.

5. Operators of retail drug stores were begining to feel that the status of their stores in the communities could be materially improved if the public could be assured that their licensed pharmacists were men of professional background and experience and carried the prestige of a full college degree.

6. Under the two-year curriculum, it was very difficult to give the average student sufficient educational foundation on which to build any research program, the lack of which during those years is still having its effect throughout the entire pharmaceutical field.

7. Manufacturers were seeking men of proper educational background for research work and for detailing and selling, but due to the inadequate scientific background of our two-year pharmacy students, these manufacturers were forced to select men who had their training in some one of the specialized fields of chemistry or of biology, but without a pharmaceutical background.

8. In the development of a public health program, it was agreed that pharmacy was or should be an integral factor in its promotion and development, but it was recognized at the same time that a two-year plan of study was hardly sufficient to enable pharmacists to acquire a proper perspective to contribute to its development.

9. The public was critical of the value of pharmacy as a profession because of the belief that anybody could be a pharmacist after a short period of study and therefore could not accord pharmacy any professional status and was reluctant to pay a price for professional service.

10. The law making bodies, whether federal or state, questioned the justification of laws regulating the practice of pharmacy and the restriction of the sale of medicines to pharmacists, primarily because of their low opinion of the educational background in the training of pharmacists.

In those colleges of pharmacy associated with universities, it was recognized that if pharmacy was to occupy a position commanding the full confidence and respect of the public,

the process of dignifying it as a profession should begin on the campus where it was taught.

The pharmacy student body represents on the average of from 1 to 2 per cent of the entire student body of the large universities which maintain colleges of pharmacy. The other 99 or 98 per cent of the student body will be the contemporaries in later life of these same pharmacy students who represent 1 or 2 per cent of the total enrollment. The colleges of pharmacy were convinced that if pharmacy was to be given a full measure of respect of the public, it must first receive the recognition of the faculties of the universities in which it is taught and of the student bodies of these universities as a whole.

Following the introduction of the minimum four-year curriculum, dating in some institutions as far back as 1926, the status of pharmacy students on the campuses has entirely changed. They are now being accorded full recognition as college students and are occupying as high a place in the student life of the universities as any group of students. They are being elected to the highest honorary positions in the student bodies of many of the larger universities, holding such offices as president of their classes, as campus leaders, as members of the glee clubs, as participants in athletics, as members of social and honorary fraternities and sororities, and, in the main, are thought of as being at the very top of student groups. These changes which are occurring on our campuses are but omens of the positions pharmacy graduates will occupy in the communities in which they locate.

Under the old two-year program of study, the faculty personnel of the colleges of pharmacy frequently acquired an inferiority complex which, in turn, was trasmitted to the two-year pharmacy students; but, following the introduction of the minimum four-year plan of study, the standards of educational and experience requirements for faculty members in colleges of pharmacy have been and are being constantly raised with the result that members of the pharmacy faculty are now taking their proper places in university life and activities. The executives of these educational institutions in which colleges of pharmacy are operated are now more definitely interested in providing proper financial support for the college of pharmacy, and the research programs of the college of

pharmacy under existing conditions command the respect and confidence of those in position to evaluate research.

Now that pharmacy occupies a place of equal dignity with the other professions in the minds of faculties and student bodies of our universities and is pointed to with pride and interest, it is assurred of a proper place in community life in the years to come as these thousands of students go back into the state each year having acquired during their college life a respect for and confidence in pharmacy as a profession. In addition to the large numbers of students, there come to our campuses each year hundreds of thousands of visitors, most of whom have an opportunity to know of the status of pharmacy in the educational institutions, and, in turn, go back to their respective communities with a higher opinion of pharmacy as a profession. With this tremendous turnover each year of people who are given this new concept of the importance of pharmacy, only a short time will elapse before all the people of the state and nation are familiarized with its aims and objectives and the important functions it performs in community life and activities. The public, having acquired this broader concept of and appreciation for pharmacy, will make it far easier to secure legislation controlling the practice of pharmacy, and the manufacture and sale of pharmaceutical products for they will be assured that legislation of this type is in the interest of the public welfare.

With the change to the minimum four-year plan of study, it has been possible to include in the pharmacy curriculum the necessary cultural subjects, to the end that the degree in pharmacy is accepted on an equal basis with other university degrees. In addition to the cultural subjects, it is now possible to give, in addition to the physical and biological sciences, some basic training in the principles and theories of economics, of salesmanship, of advertising and merchandising, which, if put into practice, will more definitely insure the successful operation of retail drug stores. *Successful retail drug stores are capable of becoming desirable customers of wholesalers and manufacturers.* The greater the extent to which we can dignify pharmacy in the minds of the public, the greater will be the confidence of the public in those items of merchandise offered for sale in our retail drug stores. There is no surer way to hold the confidence of the public in the products

sold through drug stores than to secure the faith and confidence of the public in the individual pharmacists. To this end, all wholesalers and manufacturers have that most definite stake in pharmaceutical education so eloquently referred to by Doctor Swain in his address to you last year.

The plan of education as we have followed it in America through the years has been, is now and will perhaps continue to be on an experimental basis. What to teach and how to teach it are questions which have confronted educators throughout history. They have never been answered. Education is always a process of trial and error, but, looking back through the years and making comparisons, we are definitely assured that progress has been made and will continue to be made.

If there is one fault in our plan of education in America, it is that many of our graduates and most of our people assume that, when a boy or girl graduates from high school and from college, the process of education is completed, whereas, we in the educational institutions and you in the business world know that when our graduates leave us they have only a foundation for an education which must be built upon if they are to be recognized as educated individuals. Education must be a process of continuing growth in all dimensions, and, in this respect, finds an analogy in biological processes wherein the formation of new cells to replace old ones is a condition necessary for the maintenance of life and growth.

The retailers, wholesalers and manufacturers who employ the graduates of our colleges must recognize that it is their responsibility to further the program and process of education which is only begun in the school or college. You employers must constantly fan the flame of the search for knowledge on the part of our graduates, see to it that it continues to burn and that it develops into a consuming ambition for increased and broader knowledge.

Whereas the number of graduates from colleges of pharmacy has been reduced since the introduction of the four-year program, we believe that the quality of those graduating and receiving license has been materially raised. (For the past five years, there has been an increase each year of approximately 10 per cent in entering students). These four-year graduates have a capacity far greater than the aver-

age of the two-year graduates, but what concerns the educational institutions most is whether the industry comprised of retailers, wholesalers and manufacturers will capitalize to the fullest on these capacities for increased efficiency. Regardless of how much we of the college group may stress the importance of continued study and the broadening of the educational process, when these graduates fall into your hands as employees they must of necessity adjust themselves to the conditions which you stress as being important. If these conditions do not involve a process of educational growth, a dissipation of a real asset is the consequence.

Recognizing the principles referred to in the preceeding paragraphs, corporations such as you represent and others of a similar size or nature do plan and have planned some program for the intellectual growth of their employees. The same principle is applied in the large chain organizations which is undoubtedly a factor in their success in comparison with the independent merchandising institutions, be they pharmacies or otherwise.

We of the college group recognize the necessity for a continuation of the process of education as far as we ourselves are concerned. We are engaged in research problems covering a wide field. We have our teachers' conferences for the discussion of the problems of teaching. We have established The American Journal of Pharmaceutical Education under the able editorship of Dean R. A. Lyman of the University of Nebraska as an open forum for the discussion of educational problems. We have participated in the formation of The American Council on Pharmaceutical Education, the aims and objectives of which were clearly outlined to you last year by Doctor Swain. We recognize the need of and urgently request the advice and counsel of the entire drug industry in the development of a plan of pharmaceutical education which will insure for pharmacy its proper place in American life.

Speaking to the wholesalers specifically, you know the capacity and the financial standing and the merchandising ability of the independent retailers in your territory. Hazarding an estimate as to the percentage of independent retailers who are seriously in need of some stimulus for an increased knowledge of technical and scientific products, and of merchandising practices and principles, my guess would be that

while all of them require it to keep abreast of progress a minimum of 25 per cent of the retail drug stores of America seriously need the guidance and stimulus referred to. Your estimates as to the percentage might vary one way or the other from these figures, but, in any event, there is certainly a relatively high percentage of the independent retailers falling into this group. If this or some other percentage figure is correct, several thousands of independent retailers are involved. They constitute a problem to the wholesalers and to the manufacturers who sell direct, and this problem, large as it is, may conceivably be converted into a definite asset under the guiding influence of a proper educational process.

Colleges, wholesalers and manufacturers, sensing these conditions, and, in an effort to solve them, have instituted refresher programs or clinics usually carried on in the school or college concerned. These have no doubt served a worth while purpose, but the facts are evident that those individuals most in need of an educational guidance and stimulus are usually not among those in attendance on the courses. Attendants on these courses are usually those who have, through some influence, been stimulated to realize the need for modernizing and broadening their knowledge. But the group most in need are from those small stores operated by one or perhaps two licensed pharmacists who find it impossible to attend a one, two, or more days session.

Throughout America to-day more and more attention is being given in educational and industrial circles to programs intended primarily for the education of adults. In these programs for the education of adults, personal instruction is carried directly to the individual where he would ordinarily find it impossible to attend a central meeting. This plan of adult education which is being followed so successfully in many fields is certainly applicable to those thousands of our small drug store operators. If the drug industry could recognize that it is its responsibility to carry some program of education to these individuals, many stores now considered as liabilities might conceivably be converted into assets. An increased volume of business is certain to result from the introduction of proper business and merchandising methods, and broader knowledge of technical items. The respect for the profession of pharmacy in the community would be enhanced

and the regard in which drug store products are held would be elevated in the mind of the public.

It is the contention of educational institutions that it is the responsibility of educated individuals to assume some responsibility for the educational guidance of those less fortunate than they. Following this principle through, all wholesalers and manufacturers through their traveling representatives, who have in turn acquired knowledge of general or specific nature, should assume the responsibility of carrying forward a process of education in the territories covered by them. Many wholesalers and many manufacturers have been and are now attempting such a program as this, but they meet some resistance from many retailers who think that some selfish motive prompts such efforts.

The solution to this phase of our educational problem lies in the possibility of the development of educational extension services, where, under the direction and auspices of the school or college of pharmacy, the stimulus to intellectual and commercial growth may be carried directly to the individual, to the end that every retail drug store in America may be so physically and spiritually equipped that they will reflect not only a professional spirit but financial and commercial stability as well.

These extension workers would be more than efficiency experts; they would do more than analyze a store; they would counsel, and advise and instruct the operator and clerk on a personal and intimate basis. It is the opinion of the speaker out of a long experience and an intimate association with retail pharmacists, that they would receive, listen to and heed the advice and counsel of an extension worker where this might not be true in the case of a wholesaler's or manufacturer's representative.

Operated under the direction and auspices of the school or college of pharmacy, the expense of maintaining an extension worker with proper training and experience would vary in the different states. Under financial conditions prevailing in most of our colleges of pharmacy, it would not be possible to increase the budget to this extent. Might it not be to the financial advantage of the wholesalers and manufacturers of America to provide some adequate amount of money so that, in cooperation with the schools or colleges of pharmacy, an extension program might be put into effect thus identifying the college of pharmacy, the retailer, the wholesaler and the

manufacturer as a cooperative unit for the further advancement of pharmaceutical knowledge which would contribute to better service to the public and also to greater commercial success?

In considering the subject of pharmaceutical education, I think of it of necessity as a live and growing process. As in all fields of education, the process of growth is never complete nor should it be. In this day of scientific and commercial advancement, this is particularly true of the retail pharmacist. We must never think of education as a ready-made, manufactured product, packaged, ready for delivery to an individual at a price. Education is a personal and intimate thing, and comes only as a result of our own initiative and study, its extent being determined only by our capabilities and ambitions.

In carrying forward a program for the education of pharmacists, I think of the school or college as being *only one* of the instruments through which education may be acquired. We, in the college, admit students and carry them through a process of elimination in their training, and graduate only those who seem to have the qualities necessary for success in some field of pharmaceutical activity. The retailer who becomes the employer of our graduates must in turn carry forward the process of education the college has begun and he in turn should be deeply concerned as to the quality and character of men and women admitted to colleges and graduated by them. Many of these graduates will eventually become proprietors, and unless they are men and women of character and ability, they can not hope for success and therefore are incapable of becoming good customers for wholesalers. The wholesaler then should be deeply concerned for and interested in the students in the colleges. The manufacturer in turn should feel a deep interest in and concern for the quality of men and women entering the profession of pharmacy, for it is from this group they must eventually choose their research workers, salesmen, detail men and executives. The manufacturers must also bear in mind that the position their products occupy in the mind of the public will be determined by the type and character of those entering the profession of pharmacy.

Whereas the subject of professional training and status of pharmacists may seem to have been stressed in the course

of these remarks, we college people agree that, in addition to being a professionally trained individual, a successful pharmacist must also be a good business man. It may be true that a physician, a lawyer, a preacher, a teacher, a research worker may be deemed a great success and at the same time a notoriously poor business man, but this condition does not prevail in the case of the retail pharmacist. Herein lies the opportunity of the retailer, the wholesaler and the manufacturer to contribute to the program of education of pharmacists through some such extension service as that previously outlined, for, in the last analysis, it is their responsibility to make the professionally trained pharmacist a good business man.

No program for pharmaceutical education can be considered complete unless it embodies plans for research in the scientific and commercial fields in addition to the undergraduate instruction and plans for its continuation in the adult field.

With the extension of the undergraduate program to a minimum period of four years, many of our colleges of pharmacy have introduced postgraduate courses in which research problems of scientific as well as commercial nature are being undertaken. Worthwhile progress is being made, and some notable achievements have been reported. The best interests of retailers, wholesalers and manufacturers will be definitely conserved when and if a broader research program can be made possible and maintained through the establishment of scholarships, fellowships and endowments.

The personnel of our faculties and the physical equipment of our colleges of pharmacy are now in process of becoming adequate for the conduct of this broad research program which awaits the stimulus that could be given through the knowledge on the part of the colleges that the drug industry which you represent will assume an active and integral role in its further promotion and development, thus rounding out an educational program which will establish an interlocking union between the students in the colleges, the retailers, the wholesalers and the manufacturers. Through such a unified effort and objective, pharmacy, in all of its ramified phases, will be assured of a place in the sun and be enabled to render a higher type of service to the citizenry of America.

The Pharmacist Holds His Job

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One of the rarest combinations in the world is an ideal person for an ideal job. Educated persons, including graduate pharmacists, face problems in this respect which are similar to those faced by others.

Graduate pharmacists, even in these days, are in as good or better position to find satisfactory jobs than the average well-trained person because the following fields are open to them:

1. Independent drug stores
2. Chain drug stores
3. Hospital pharmacies
4. Pharmaceutical and drug manufacturing
5. Sales and professional service work with pharmaceutical and drug specialty manufacturers
6. Teaching and research
7. Merchandising and advertising
8. Physicians supply houses

It can therefore be assumed that the pharmacist of average ability will make a connection; and a person who already has a job can usually find a better one provided he is capable of making a better job out of the one he already has.

It is fallacious to assume that ability and knowledge are the only factors influencing success in pharmacy. Ability and knowledge are important in any field but other factors exist which seldom receive the attention their importance requires.

Gwynn A. Prosser of the American Institute of Banking is authority for the statement that "more people lost their jobs in 1938 because of bad dispositions, temperamental traits, and careless manners than because of any other thing. A survey of 76 national firms reveals that only 10 per cent of employees lost their jobs due to lack of mechanical skill or ability and that 90 per cent of them were discharged because of bad temperament and personal faults."

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*The author, a graduate of the University of Nebraska, has had extensive experience as an employee and as an employer. For several years he was manager of the Chicago branch of E. R. Squibb & Sons. He is now Product Sales Manager for the company. This article was written for this Journal at the request of the Editor.

There is more responsibility associated with the pharmacist's knowledge and ability than with ordinary employees in business. However, the faults to which Mr. Prosser refers cannot be disregarded in pharmacy, or for that matter, in any of the professions.

It is hoped that some of the following suggestions will be helpful to those who are now employed as pharmacists or who will soon be undertaking positions in pharmacy.

Competition in pharmacy is keen but not too keen to make way for the pharmacist who thinks constructively. An analysis made by the Harvard Graduate School of Business on thinking in business shows that 95 per cent of people use about 8 per cent of their mental energy, 3 per cent use about 15 per cent of their mental energy, and 2 per cent use from 15 to 20 per cent of their mental energy. This leaves opportunities wide open for the pharmacist who is willing to think, originate and create.

Success depends in no small measure upon the quality of thinking which must be constructive as compared to negative, fearful and non-productive thinking. This being the case, this article should at this point take on a more constructive complexion with less material as to what makes people fail and more, on what to do about succeeding.

Some time ago I made inquiry as to the progress of a young man who had just taken his first position in pharmacy. The reply of his employer was about as follows: "George is doing all right. He delivers more than he is asked to deliver," —which was the first indication that my friend, George, was about to be given additional responsibilities. Later, I inquired again, and this time the reply was about as follows: "George is coming along fine. He never brings me a problem in the same state in which it was given to him." This to me indicated another fortunate attribute of this young man, possessed by all too few of those who enter pharmacy or business. He was determined to contribute some original thinking to each problem before he passed it along to his immediate superior who could make good use of the ideas for a successful solution of the problem, embryonic and incomplete as those ideas may have been.

All of us who have had experience in pharmacy have witnessed the spectacle of drug clerks submitting to their employers perplexing problems without constructive sugges-

tions as to how these problems might be solved. As a matter of fact, I should say that I, personally, have been guilty of this procedure in many instances because it is always tempting to take a problem to the man higher up and "toss it into his lap". That is the easiest way and far too many of us have the feeling that we should receive some recognition for unearthing a problem and it has never occurred to us that we might be able to assist in pushing the obstacle out of the way.

Someone has said that the world belongs to extroverts yet newcomers to business and the professions cannot afford to approach their duties in the spirit of reckless abandon, hoping that their charm and personality will carry them through to ultimate success.

A detached and dispassionate analysis of one's attitude, as well as abilities, will often result in a refreshing "mental bath". This self-analysis should take into consideration the positive factors which lead to productive work and the sense of well-being and happiness which accompany it.

Asking ourselves these questions as checking points may lead us off the level of mediocrity and toward a sensible objective, namely, making the most of ourselves and our abilities:

1. Am I industrious to the point that even I would no longer call myself lazy?
2. Am I interested to the extent that indifference never shows itself in my attitude?
3. Do I work harmoniously with others, doing my part to eliminate discord?
4. Am I sufficiently confident in my ability to eliminate fear?
5. Do I cooperate instead of oppose?
6. Do I make order out of confusion?
7. Do I remain calm and avoid worry under practically all conditions?
8. Am I alert or do I frequently miss opportunities?
9. Do I allow myself to relax even when under pressure?
10. Do I strive for punctuality?
11. Do I understand what it means to be economical?
12. Am I loyal to my associates as well as my superiors?
13. Are my habits beyond reproach?
14. Am I grateful and do I show it?
15. Have I overcome rudeness with tact?
16. Do I strive for simplicity in the things I say and the things I do?
17. Can I make up my mind what I want to do?
18. Can I act when action is needed, or do I vacillate?

19. Am I thorough?
20. Do my associates consider me reliable . . . do I make promises I cannot hope to keep?

Generally speaking, pharmacy will reward those who can and will think, who are sincerely interested in the jobs they now fill, and who are prepared to assume the responsibilties of leadership.

Women in Pharmacy

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A survey has been recently conducted by the Prescription Girls' Club, an organization of women students at the University of Colorado College of Pharmacy, in an attempt to answer the questions which are foremost in their minds. What opportunities exist for women graduates in pharmacy? What are those women who have previously graduated from the College of Pharmacy doing now? What college courses are most helpful to women who graduate in pharmacy?

The survey was conducted in the form of a questionnaire which was mailed to all women who have graduated from the college from the time of its inception nearly thirty years ago. A gratifying number of replies was received; and, since these represented slightly better than fifty per cent of the whole, it was felt that a truly representative cross section had been obtained. A number of interesting facts were accumulated from the replies, and it was felt that much of this would be of particular interest to members of other pharmacy faculties.

Judging from the answers received, the questionnaires reached women now employed in at least ten different occupations, as well as the many who have married and are now housewives. The questions were designed to determine not only what the graduates are doing at present, but, what is perhaps more important, what they did immediately following graduation.

Nearly all who did not marry were employed very soon after graduation, the nature of employment for the first year being distributed as shown in the table below.

First Employment after Graduation
(All Women Graduates)

Occupation	Percentage
Pharmacist: General	38.5
Hospital	19.0
Medical technician	15.5
Teaching	11.5
Chemist	7.5
Married	4.0
Non-related field	4.0

The salaries received during the first year following graduation averaged slightly over one-hundred dollars a month for the group answering the questionnaire, though in many cases the remuneration was not entirely in cash, but was partly cash and partly maintenance, as board, room, laundry.

Naturally the employment picture is not a static one, but as time passes, many of the women marry and drop out of the professional field. As a result we find the total group now employed as summarized in the table to follow.

Present Employment
(All Women Graduates)

Occupation	Percentage
Housewives	38.5
Married but still employed	7.5
Pharmacist: Hospital	19.0
General	11.5
Medical technician	11.5
Teaching (college and high school)	7.5
Technician and pharmacist	4.0
Chemist	4.0

A comparison of this table with the preceding one indicates that, although the type of work chosen at graduation seems to be followed through in most cases, there is a definite trend toward the hospital type of work. This seems to be very significant.

A high percentage of women graduates in pharmacy marry sooner or later after leaving college, the majority of them seeking employment in their chosen field during the interim. It might be argued by some that pharmaceutical training is poor training for housewives. In direct contradiction to this thought, however, is the response which the pharmacy graduates who are now housewives gave to this question: "Do you consider pharmacy a good field for women? Why?" One-hundred percent of the housewives

answered this question in the affirmative! Many of them stated that they had found their training in pharmacy to be of definite value, while others merely expressed a satisfaction with their choice of pharmacy as a field of study while in college.

Those who are now employed in pharmacy were not unanimous in recommending it as a field for women, though the opinion was overwhelmingly in the affirmative. Several of those who did approve of pharmacy as a profession for women expressed the belief that opportunities are many and that conditions are improving. However, most of these expressed the belief that women should attempt to enter the hospital pharmacy or medical technology fields, rather than to seek employment in drug stores. The feeling seemed to exist that much of the routine drug store work is too heavy for women, and that in many cases conditions are esthetically unpleasant. This thought is undoubtedly reflected in the trend of employment which was recognized from the tables.

Finally, an attempt was made to determine what college courses have been of most value to the graduates. We must bear in mind that replies to this question will be conditioned to a great extent by the present employment of the individual The courses which were mentioned most frequently were general chemistry and general pharmacy. Other courses, in order of their asserted value, were prescription pharmacy, bacteriology, materia medica, official pharmacy, pharmaceutical arithmetic, and German. Several other courses were mentioned once, physiology, biochemistry, analytical chemistry, drug analysis, toxicology, English, commercial pharmacy, organic chemistry, photography.

In conclusion, may we say that this summary seems to indicate that the fields open to women pharmacists are many and varied and probably, in many cases, still but little explored. Those women who have left college with a pharmaceutical training seem well satisfied with their background, whether they are now employed in the professional field or whether they are engaged in the business of raising a family. Women graduates seem to experience but little difficulty in finding immediate remunerative employment after graduation. Taken collectively, these facts should afford our women students some feeling of security and should be an encouragement to women contemplating pharmacy as a field of study.

An Outline for a Course in Manufacturing Pharmacy*

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In accepting the responsibility of writing on this topic for the Teachers Conference, the writer did not quite visualize the limitations of the title. As he now prepares to develop the subject he realizes that four other related topics have also been suggested and the preparation of an outline for any type of course would almost necessitate certain defenses which will overlap and encroach upon additional topics which are to follow. While the first speaker on a program might, as so often happens, present the very things which others had expected or hoped to say, I will, as far as possible, limit myself to a more restricted topic, trusting that the papers which will follow will, either in their original presentation or in the discussions which accompany them, verify or explain certain points.

What is manufacturing pharmacy? I am quite certain that whatever I might offer as a definition would meet with differences of opinion, for I recognize a wide latitude in the present use of this term. Manufacturing is undoubtedly conceived or considered in terms of degree, and it becomes very difficult if not impossible to state exactly where it commences, although we will probably all agree that it usually reaches its zenith in our so-called "large pharmaceutical manufacturing houses." But even there we find that they too often depend upon others dealing in quantity production far in excess of their own individual needs, so that even the "large" manufacturer becomes a "small" one under those terms. The pharmacist who sets aside his empty shelf bottles is most certainly manufacturing after a fashion when he later prepares a stock water, syrup, mixture or lotion, be the quantity a few hundred cc. or a few thousand. A few hundred cc. to one pharmacist becomes a few thousand to another. A few thousand cc. for one hospital becomes many liters to another. Many liters to one "manufacturer" becomes gal-

*Read before the Conference of Teachers of Pharmacy at the Richmond meeting May 6, 1940.

lons to the next, hundreds of gallons to another and thousands to still others. Is only he who deals in thousands of gallons to be considered a manufacturer or does it start with the hosiptal and its possible few liters, or does the pharmacist himself fit into this same picture? I believe we will agree that it is a matter of degree and to one hundred individuals it might start in one hundred different places, according to the individual perspective.

Looking at it from another angle, a hand graduate is eventually transformed into graduated tanks or metered hose lines. A stirring rod becomes a paddle and eventually an electrically driven power mixer. A mortar and pestle is transformed into a ball mill, a powder mixer or a mass mixer with strong gears for doughy mixtures. A capsule operation leaves the hand filling field and graduates through several stages to the completely automatic unit. The ointment tile likewise goes by degrees through its evolution to the five-roller mill. And so we might continue endlessly. But again, where does manufacturing start? And again the answer is the same, it starts most anywhere, being purely a matter of degree.

However, even with the above synopsis, I believe that for the most part, our member colleges have in mind for manufacturing pharmacy, that which comes in one of two classifications. The first is that associated with hospital pharmacy, said hospital being part of the university system and naturally depending upon the pharmacy department for its routine operation. While we have numerous instances of such affiliation and cooperation in our group, it is hardly within my jurisdiction to discuss them since in my institution we have no such specific contact. It is my hope, however, that one of those selected to discuss this paper may have such contacts and will accordingly present the subject from that angle.

Our manufacturing course, to be specific, is referred to as industrial manufacturing and is patterned more directly after the routine found in our well-recognized pharmaceutical manufacturing laboratories. Not that a student could walk into any specific plant job and "know all the answers", as the saying goes today, but he does obtain a broad picture of the problems, the details of continuous control and records, an insight into manipulative methods, the handling of certain apparatus, a study of equipment in general, and practical experience on certain operations not generally afforded other-

wise. All of which should broaden his perspective, enable him to consider projects with a more open mind and with a relative degree commensurate with the importance of the task or problem at hand.

Specifically, considerable stress is placed upon the detail of records and controls and the student finds himself as a worker, operator or possibly a director, first of one department and then another, as his specific operation goes through its normal routine movements. As an example, as he receives an assignment to prepare some item, the item is given a "manufacturing lot number" which follows it and identifies it as to the particular lot, the quantity, the date and the operator, these numbers being issued consecutively, the data properly recorded in a permanent book. He then proceeds to prepare his working formula, has it approved and from it issues a requisition in duplicate to the stock department for the necessary quantity of ingredients. The stock department, however, may use only "approved" items, meaning items passed after proper checks by the control department and identified by the "blue ticket" or "release ticket". Consequently, in the case of the item being manufactured, it is necessary to go a step further at this stage, actually starting out with the receipt of raw stock in the receiving department, where each item receives a stock lot number, issued consecutively, which will identify it always as to source, manufacturer's control number, quantity, style package and date received, these facts also being recorded in a permanent record book kept for the purpose. A sample of this incoming stock, properly labeled, is taken to the control department where our student now becomes the control chemist whose duty it is to carry out all the official tests for identity, purity and assay, for each article in question, preparing his own test solutions, volumetric solutions and control standards as he proceeds. Each sample is given a "control" number and the details and results of the various tests are recorded, a final report being made for each item. Upon approval of the report, the blue release ticket is issued, this now carrying the lot number and control number of the article. The release ticket is attached to the stock container and the stock department is now in a position to weigh out the necessary quantity of material as requisitioned, entering the stock lot number of the material used, on the requisition sheets and having each weighing checked and ini-

tialed. One of the requisitions is returned to the manufacturing department with the goods ordered, a receipt is obtained for the goods and the receipt attached to the duplicate requisition in the stock department for future reference and control of stock. In the manufacturing department the operator now proceeds with his task, weighing the items required, entering the stock lot number for each item and again receiving the stamp of approval on each weight. The preparation is now manufactured, a sample taken to the control laboratory for final approval and release, performing whatever tests or assays are necessary.

One can see that from such detail the student is made to realize the tremendous responsibility involved in preparing items in a large way for general distribution. Tremendous values are always at stake in large scale, manufacturing and with so many different individuals handling successive stages of an operation it becomes necessary to follow recorded methods strictly.

By this routine ointments are manufactured, using a paint-type mill and a porcelain pebble mill for those substances which would be attacked by metal. The pebble mill is also used on certain other operations where desirable. Syrups, elixirs, emulsions, spirits, tinctures, fluidextracts, extracts, both powdered and pilular, and powders are also prepared. And finally, considerable time is devoted to tablet manufacture and tablet coating, a very important item in present day manufacturing.

In addition to the two pieces of apparatus mentioned above, the laboratory possesses a tube filling machine, a lightning power mixer, glass-lined tanks, a homogenizer, a motorized power mixer and sifter, a power mass mixer, a motored drug mill, an electrically heated hot-air shelf drier with fan attachment, a Stokes' "E" tablet machine, several tablet coating and polishing pans, equipped with air and vacuum hose attachments, a stainless-steel steam kettle, two large stainless steel percolators, one equipped with a pump for recirculation and repercolation, the other built to withstand vacuum and pressure, a combination vacuum still and extractor with rectifying column, a vacuum shelf dryer, a Lloyd extractor, a two-disk pressure filter, a steam boiler and a vacuum pump. All motorized equipment carry individual motors, usually of the gear-in-head type. Many other auxiliary pieces are of course

available, including stainless steel double boilers, assorted stainless steel sieves for preparing tablet granulations, a set of standard sieves for use in drug milling operations, assorted measures, assorted balances and two of the work tables have sunken tops and are covered with allegheny metal.

Even with such equipment, the quantity prepared in many cases is not large. While most of the tablet coating is done with inert material, prepared in lots of approximately thirty pounds, yielding some forty thousand tablets, yet individual lots of medicated tablets, usually those official in the National Formulary, are prepared in quantities of only one thousand or even five hundred, which is ample to provide the necessary routine to make the student follow each step carefully in order to obtain practically a 100 per cent tablet, a task more difficult on a small scale than it is on a large one. Ointments vary from one to five pounds, tinctures, extracts and other items may be readily made from drugs of low initial cost, thus allowing for large enough quantities to show properly the various phases of the operation, as milling, percolation, distillation and evaporation under vacuum and final concentration either in the still extractor or vacuum shelf dryer.

The tablet coating pans are run continuously throughout the year, a different student being assigned to this work each week. White and dark tablets are coated, and white, yellow, pink, blue, green, orange, red, violet and chocolate coatings are applied, the tablets finally being polished.

Crude drugs which are used in this department and also all those used in the other pharmaceutical laboratories for the preparation of tinctures, fluidextracts, extracts, resins, oleoresins, infusions, and syrups are purchased as whole drugs and milled in the department.

A very efficient floor wax is also prepared in quantities to satisfy the needs of the entire building and frequently other items are prepared for use in the building proper.

Fundamentally, there is not a great deal of difference between small and large scale production in many items, particularly those such as tinctures, elixirs, syrups, etc. On the other hand there is a marked difference in the preparation of an ointment with a slab and spatula as compared with an ointment mill, but in the latter case the process is simplified and less technic is actually required than in the smaller hand process. Tablet coating, however, is really a manufac-

turing process and not a prescription counter problem at any time. Individual technic is involved at all times and it is not a process to be learned through the medium of a text, for a slight difference in interpretation of critical periods will materially change all subsequent steps. Students or operators must experience these varied possibilities and be able to recognize them as they occur and deal accordingly with those which follow.

I fear I have already encroached upon other topics which are to follow and at the same time I am not at all satisfied in many respects with what I have presented. However, I believe that the picture will be made more complete with the additional papers as they are read, and the discussions which must follow are, after all, the most important consideration.

Is Extensive Equipment Necessary for Teaching Manufacturing Pharmacy or Can Much of It Be Taught by Lecture without Equipment?*

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In the development of the above assigned topic I have found it necessary to approach it from the point of view of the ultimate application of the material taught.

The ideal equipment outlay is one which will enable the instructor to develop the basic principles involved in the manufacture of the several type products, such as bulk ointments, powders, tablets, liquids and sterile products. The last named might be considered in a course in bacteriology, though the decomposition of medicinals when subjected to heat is not ordinarily given consideration in such courses.

The subjects proposed for this conference do not include a discussion of any benefits which may accrue to an individual as a result of training in manufacturing. I shall digress from the topic assigned only to present certain factors which are pertinent to the whole subject and which are drawn very largely from personal observations.

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*Read before the Conference of Teachers of Pharmacy at the Richmond meeting May 6, 1940.

There are certain applications for manufacturing in every retail pharmacy, limited only by volume demands. The volume may be greatly increased by the individual's interest in promoting sales through an effort to supply physicians needs as well as the public demands. It should be apparent that one would approach the presentation of his own products with which he is thoroughly familiar, with a great deal more confidence than if he were presenting a manufactured product where he assumes the role of merchant only.

The type of training necessary for hospital manufacturing and that for large scale commercial manufacturing is so similar that they may be considered essentially the same. Requirements for retail stores may vary somewhat but the principles involved are identical.

A study or development of new formulae need not be considered here as these more properly belong to a research division, while standardization is a function of a control laboratory. Teaching the development of the more common formulae is ordinarily a function of other courses in pharmacy.

Manufacturing experience lends encouragement to the student, makes him competent to do those things which will help him professionally and at the same time to know his limitations with regard to available equipment.

Since neither the student nor his faculty adviser can with any degree of accuracy predict the future of the student's activities when out in practice, it would seem eminently advisable to consider the development of manufacturing to the highest degree, consistent with other pharmacy courses and without consideration to the student's competence to determine his future course in the practice of pharmacy. In other words an elective course does not seem a proper approach to the subject.

Pharmaceutical instruction in the past has been developed to fit many conditions, each with the idea of providing another outlet for pharmaceutically trained persons, other than that of the drug store. This has led to curricula for pre-medicine, specialization in the biological sciences and the development of technician courses. These developments have been largely at the expense of basic courses one of which is manufacturing.

The presentation of manufacturing pharmacy requires the teaching of a technique unlike that which has been taught in the earlier courses in pharmacy.

Filtration, for example, presents many problems in quantities from five to one hundred gallons or more, as compared to quantities of from four to sixteen fluidounces. Teaching gravity feed and high pressure filtration could scarcely be made understandable through pictures or by painting a word picture. A filtered product should be brilliantly clear and can be made so if properly handled.

In the milling of ointments it would be quite impossible to impress a student with the need for bolting zinc oxide, the order of milling ammoniated mercury on very fine adjustment, or for bolting calamine and zinc oxide in the preparation of calamine lotion or liniment. Many other products might be used as examples. It is not feasible for either the United States Pharmacopœia or the National Formulary to present directions for the preparation of more than the limited unit set up in these tests and the completion of them requires only very modest equipment. Smoother and better products are made otherwise. The student should be given the benefit of such training.

Tablet materials with few exceptions require special preparation, namely, granulating, before compression. Choice of excipients, lubricants, and massing fluid must of necessity be learned. How to avoid capping, sticking, or picking of certain tablets must be observed in practice to appreciate their meaning and a method devised to overcome them. By making a few tablets in a hand powdered machine one might never encounter the difficulties that follow as the result of heat development in a power driven machine after an hour or longer of operation.

Preparation of sterile solutions such as boric acid, dextrose, procaine, saline, magnesium sulfate and many others can probably be presented best if one has a hospital pharmacy with which a working arrangement is possible, where the students, even though they may not engage in the actual preparation of products, may after class instruction preferably by the pharmacist in charge, go to the pharmacy and observe the filtration and sterilization of the several products. Filling and closing of flasks and ampules is of course a part of the instruction.

The subject "Manufacturing" would be just as difficult to present without equipment as any other course. Better that we make no effort to offer it than to offer something other than that which the name connotes. One may be forced by

circumstances to make a modest beginning but temporizing indefinitely on equipment should not be countenanced. Experience in manufacturing pharmacy as in every other field must be gotten through actual practice, the best that we can do is to lay a proper foundation, for it has been well said, "There is no substitute for experience".

Teaching Salesmanship in Pharmacy*

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To those responsible for preparing the curriculum in a pharmacy college the problem pertaining to commercial subjects is always a debatable one. In the opinion of some deans, there should not be a place reserved for them, while others, believe a certain amount of time and specific material should be allocated and presented for the teaching of commercial subjects.

It is not within the province of this paper to make any claims for particular commercial courses that could or should be placed in the pharmacy curriculum, but rather to confine the text of this paper to the one topic of salesmanship. And in so doing explain how such a course could be made interesting, educational, practical and still maintain the dignity of the professional school by teaching the subject from the scientific point of view instead of the methods usually employed in general courses on the subject.

The first stage in good pedagogy is to create an interest in the subject and to maintain this interest by building up a storehouse of fundamentals in such a way that it can be called upon to supply the knowledge for practical purposes. In doing this we must constantly remember that our students are scientifically minded and anything that deviates from this fact is likely to be uninteresting and merely tolerated by the student. It may happen that he develops a resistance to the course with the ultimate result of failure or creates unrest among his fellow students—because of his disinterest. So, with this latter point in mind, we should develop our course

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*Read before the Conference of Teachers of Pharmaceutical Economics at the Richmond meeting, May 6, 1940.

in such a way that it has a scientific background and then from there develop the interest to the final practical usage of the material.

In the broad sense, salesmanship is based upon two fundamental sciences,—philosophy and psychology. In the field of philosophy we learn that it has its influence upon all human life, we learn that nearly all men have certain philosophies by which they live, in some cases it may be clearly defined and known, but in many cases it may be just a way of living without any thought out or pre-arranged plan. Therefore, anything that can be taught about ways of living or factors that influence their mode of living, certainly can be of definite use to any one who must influence people.

In psychology there is a broad field for the teacher to show how most of our actions are based on this science. Psychology teaches us how stimulii can be given, how reactions occur and what factors may come in to offset these. It likewise teaches us that individuals can be grouped into certain classifications and how instincts, motives and desires play such important roles in man's life. Consequently, by classifying man's desires, we instruct the student in fundamentals that are the driving force for all activity. Now to connect the sales angle to the science, we proceed to show how these various desires can be satisfied.

In a further detail of the course we take up instincts, the acquired, complementary or secondary instincts and explain how these are common to all men but occur in varying degrees. Here again we turn the sales angle on the course and show how certain appeals can be developed which are applicable to certain instincts.

In explaining how motives of some sort are behind man's activities we show the predominant motive to be gain, then happiness and finally protection. Under each of these groups we can readily show the student how drug store merchandise is particularly adaptable to these motives and explain how they are the chief reasons why people buy things. By this time the teacher will have created sufficient interest in the student through the scientific application of the course that the teacher can now cover such general topics that are applicable to successful saleswork. Among these are considered personality, tact, courage, enthusiasm, methods of handling customers, meeting objections and excuses, how much and what

kind of merchandise to show, how to close sales and how to increase unit sales. In teaching these generalities they can be directly applied to specific cases of drug store problems. In another manner, the various departments of the drug store can be taken separately and the methods and procedures that are applicable to merchandise for these specific departments. During the entire course a most useful tool to use is the preparation of outlines on specific drug store merchandise. The outlines should cover group products and give detailed information about materials used, the use of the product, method of manufacture, price, quality, and competitive items. These outlines will serve as the basis for 10 minute papers to be read by each student on the merchandise of his choice.

Finally the student is required to give a sales demonstration and subject himself to the criticisms of the class. This may be in writing and turned over to the student or it may be an open discussion: salesmanship is a necessary and useful subject and can be made interesting and beneficial only if consideration is given to it from the viewpoint I have mentioned. Unfortunately, today the very word salesmanship is compared to showmanship because the country is overrun by high pressure talkers dealing out what is presumably salesmanship in sentences or catchy phrases, and overlooking the fundamentals and reasons behind the course. Let us hope our teachers of this course in the schools of pharmacy will realize this and teach the subject as it should be taught, from the scientific point of view.

Programs in Pharmaceutical Economics*

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In approaching the subject of programs in pharmaceutical economics the intention has been not only to ascertain the amount of time allotted to economic subjects, but also the mental set of those in whose hands is vested the responsibility of giving such instruction.

Experience has amply demonstrated that the mental set

*Read before the Conference of Teachers of Pharmaceutical Economics at the Richmond meeting, May 6, 1940.

of those empowered to act in educational as well as other matters often reveals more than scientific data pertaining to a subject even when such data are available. While the writer would welcome a study that might indicate the valid claims, if any, of extended economic training in the so-called business of pharmacy, he has felt that in the absence of such a study a point of departure might be afforded if a cross section of the opinions of administrators and teachers could be obtained in this controversial matter.

A questionnaire was designed from this point of view. The six captions were intended to give some flexibility in answers so as not to delimit the problem. Answers were received from fifty-five schools and, in the writer's opinion, afford a good picture of the place now occupied by pharmaceutical economics in modern pharmaceutical curricula.

The Questionnaire

1. Number of clock hours?
2. Do you favor expansion of present program?
3. Do you believe schools have the obligation of providing business training?
4. Are your courses general or applied in nature?
5. Do you favor research in commercial pharmacy?
6. Are students vitally interested in business courses?

Clock Hours

A study of the clock hours of the chart reveals that there was a fairly wide spread in the number of clock hours devoted to such instruction. The lowest number of hours given was 18 and the highest number was 288 (given by two schools). The average for the fifty-one schools reporting was 135.6 hours. Twenty-six schools gave less than 136 hours, three schools gave 136 hours, and twenty-two schools gave more than 136 hours.

Expansion of Program

Eighteen schools reported favoring expansion of their present program, while thirty-three did not. Of the eighteen favoring expansion, ten gave less than 136 hours, one gave 130 hours and seven gave more than 136. The highest number of hours given by a school favoring expansion is 288 hours (the largest number reported). The returns would seem to indicate that the majority do not favor expansion of their present programs.

Obligation of Providing Business Training

Of the fifty answering this question forty-two felt that the schools had some obligation in providing business training, while eight very definitely felt that such instruction had no place in the pharmaceutical curriculum. The writer purposely did not define what he meant by business training. The intention was to get responses in relation to business training (so called) as it was ordinarily regarded by teachers in the field. In other words, it was safe to conclude that those answering felt that the schools had an obligation to provide some training in the economics of pharmacy. In no reply was the position taken that schools of pharmacy either could, or should, provide extended training in business. Rather, we might conclude that we should, to the extent possible, equip students with the broad basic principles underlying our present economic system. Some feel that the time to give such training is following graduation either through adult educational programs such as those under the George Dean Act or through the schools by refresher courses which seem to be on the increase.

General or Applied Courses

Of the fifty-one answering this question eight gave general courses, twenty-one gave applied courses while twenty-two gave some of both. From the answers we may safely conclude that most courses, exclusive of principles of economics, principles of accounting and such other general courses most of the other material is applied strictly to the field. With the limited amount of time available, this is precisely what we might expect.

Research in Pharmaceutical Economics

Of the forty-nine answers to this query thirty-seven favored research in this field and eight did not. This attitude, if translated into action, might prove very helpful in enabling us to draw into a sharper focus the entire problem of what courses in pharmaceutical economics should, or could, be provided.

Interest in This Field

To this query forty-three answered yes and seven no. The result would seem to indicate that there is more than the usual interest in such courses when they are properly given.

Conclusion

What should be done in this matter, is still a vexing problem to the writer. From the academic viewpoint, schools of pharmacy as such, certainly have no obligation to provide adequate business training. That is indeed fortunate for them, because, in my opinion, they could not do it anyway. As a practical consideration, however, there may be something schools of pharmacy can do along general lines in economics that may have great practical as well as significant cultural value.

The Teaching of Manufacturing Pharmacy*

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According to a survey of "The Four-Year Course in Pharmacy" by DeKay and Lee (1), an effort was made to determine what courses were included in pharmacy curricula. It was found that fourteen of the twenty schools included in the survey were teaching a course which was classified as manufacturing pharmacy. In a second survey of the same schools (2), it was found that eight of the twenty schools were teaching a course which we classified as manufacturing pharmacy.

Our definition of manufacture is "Any process or operation of making products in large quantities by hand, machinery, or other agency." In our practice of using the term "manufacturing pharmacy", it does not seem probable that such a course could be taught in less than six clock hours of laboratory a week. The recent catalogs of the various pharmacy schools were again carefully analyzed to determine a number of factors which would have some bearing on this subject. Fifty-eight catalogs of the schools of pharmacy were surveyed on the following points: (1) How many schools taught a course which was called manufacturing pharmacy? (2) How many schools had a student health service? (3) Of those having student health, how many schools were filling and dispensing prescriptions to the student body? (4) How

*Read before the Conference of Teachers of Pharmacy at the Richmond meeting May 6, 1940.

many schools were teaching a course in manufacturing pharmacy which was on a production basis? (5) How many schools were teaching dispensing? (6) How many schools were manufacturing for their student health servcie? (7) How many schools had a model drug store?

The following results were obtained:

(1) Twenty-four schools were teaching a course called manufacturing pharmacy.
(2) Thirty-two schools had a student health service.
(3) Seventeen schools had a dispensing service to students.
(4) Eight schools were manufacturing on a production basis.
(5) All schools were teaching dispensing.
(6) Seven schools were manufacturing for the student health service.
(7) Nine schools had a model drug store.

The survey of these catalogs revealed one outstanding point concerning the above information, namely, that it was more or less impossible to determine whether there was a student health service or dispensing of prescriptions to the student body. In order to get more accurate information it will be necessary to get it from the individual schools by correspondence and answers to questionnaires. It is our opinion that a greater number of schools have a student health and dispensing service than is shown by the various catalogs examined.

The course in manufacturing pharmacy, in our opinion, should embrace the quantity production by hand and machinery of the type of products commonly dispensed over the prescription counter. In a former paper presented before this group (3) several points were brought out concerning the aids to the teaching of a course in manufacturing pharmacy. Some of these will bear repeating because of their importance. First "The course in manufacturing pharmacy can be made to have an appeal for the student that few subjects possess". Second, it stresses the importance of accuracy and technic in manufacturing processes. Third, "The creative attitude and the urge of curiosity have always played a part in the educational process."

Manufacturing pharmacy which involves production on a large scale, such as, quantities of pounds and gallons, can only be taught in schools where the materials can be dispensed on prescriptions. The expense involved would be too great if the material is destroyed after manufacture.

Purdue University has an ideal situation which can be recommended and we believe obtained in all schools of pharmacy. The health of the student body is the same in all schools. Therefore, the answer is an adequate student health service. We do have an excellent student health service at Purdue University which is operated on the campus. The staff of the health service consists of three men and one woman physician, a trained nurse, a technician and assistants with trained nurses in the residence halls. The students pay a small fee each semester which entitles them to free medical and free prescription service.

The physicians write prescriptions which are brought to the *Apothecary Shop* of the School of Pharmacy where they are filled by the senior students under the direct supervision of three registered pharmacists. The total prescriptions dispensed prior to 1939 had averaged between 14,000 and 16,000 annually and last year there was a total of 25,000 prescriptions filled in this department besides filling a total of 70,000 items for the student health, residence halls, and athletic department.

This student health service began to function in 1917 and the prescriptions have been filled and dispensed in the School of Pharmacy since that time. The pharmaceuticals used in filling these prescriptions and supplying the various branches of the student health service are of large variety and it is the part of the manufacturing class, consisting of Junior students, to supply them.

The manufacturing is done by approximately twelve students per semester under the direct supervision of two instructors.

Schools of pharmacy that do not have a hospital could well afford to contact the university officials and start a health service or, if a health service is already established, should contact this department and consider the filling of student prescriptions by the advanced dispensing class of the school of pharmacy. The cost of manufacturing is approximately one-fourth to one-half of the purchase price of the pharmaceuticals which would be used in this service. It has been proven to us that this service to the student body has been profitable to the student health service and to us as an aid to good teaching. The student obtains a thorough grounding in the fundamentals of pharmacy and then applies

these fundamentals to the manufacturing processes. This is then carried over into his senior year dispensing course.

At a meeting of the Hosiptal Pharmacy section in the Tri-State Hospital Assembly of 1938, the writer presented a paper on the cost of manufacturing pharmaceuticals for a hospital pharmacy. In 1939, two reports were made at this meeting on the lowering of the cost of operation because of the large quantities which were being made in the department.

The schools of pharmacy could well afford to investigate the possibilities of introducing a dispensing service in the department which would serve as an outlet for the manufactured products. The advantages to the institution would be multiplied well beyond the efforts required to establish such a department. The students would gain valuable material from the educational standpoint in putting into practice the theories and fundamentals of pharmacy which had been obtained in the courses in beginning and operative pharmacy.

The manufacture of large quantities involves a different technic than that of small quantities. The equipment used will include larger funnels, beakers, utensils and even machines. The training, however, would be extremely valuable to the student in his future work as a registered pharmacist. His knowledge of the products which he sells will be greatly enhanced and he will be in a position to explain to his customers some of the finer points of pharmacy.

A second extremely valuable advantage of a course in maufacturing pharmacy is the realization on the part of the student of the professional aspects of pharmacy.

It is our firm belief that a course in manufacturing pharmacy should be offered in schools of pharmacy that do not have hospital facilities. The Health Service at Purdue University is a good example of what can be done in other institutions. The cost of medication would be lowered to an extent commensurate with the service rendered, with the result that the institution, the student and the department would gain by such a service.

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(1) Proceedings, A. A. C. P. (1929) page 39.
(2) Ibid, A. A. C. P. (1935) page 49
(3) Jour. Amer. Pharm. Assoc. *26*, 255 (1937).

Prescription Pricing

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There is no problem that the practicing retail pharmacist has bemoaned so often as the price variations found on prescriptions. Considering the practical importance of this problem, to pharmacy students, it is surprising that the schools have done so little to correct this condition. Uniform prescription pricing can be achieved only by the united effort of all pharmacy groups, including schools, rather than by independent organizations. The lack of united effort, combined with the inflexibility of most pricing schedules, is the major contributing factor of incoordination. The problem cannot be solved on a national basis, but must be approached from a regional standpoint, using a pricing schedule allowing a regional variation, because of the great difference in the income and buying power of the various territories.

Here at the University of Idaho College of Pharmacy, until two years ago, we had been using the prescription pricing schedule of the National Association of Retail Druggists to price all prescriptions compounded in dispensing pharmacy. At that time our graduates appearing for examination before the State Board of Pharmacy were severely criticized on their method of pricing. Further investigation revealed that this schedule was too high for the income and buying power of this section. Inasmuch as this schedule contained no provision for variations to meet local conditions, we found it necessary to develop a new one which meets this requirement, and which also has the approval of our State Board of Pharmacy.

In arriving at the price of a prescription by means of our schedule, three factors are considered. First is the compounding fee (C), which covers labeling, filing, assembling, weighing, checking the prescription, and also the cost of the container. As the time involved varies with prescriptions which must be compounded and those which are ready made, fees are charged for both types to cover the difference in the time element. The second factor considered is the professional fee (P). This is based on the number of doses, the nature and character of the prescription, the skill and care required

in compounding. As is to be expected, this varies with different preparations. It is assumed that more care and skill are required, for example, on an eye solution than on a liniment, and thus a different charge should be made for each type of preparation. This charge should remain constant for all communities. The third factor is the selling price (S) of the ingredients. This assures the pharmacist a profit on the materials used. He is entitled to the same margin of profit as he would receive should he sell the material over the counter, that is 33⅓ per cent on the selling price. This is a legitimate charge which should not be disguised in the other fees.

It should be noted that of the three factors involved, the selling price of the material remains constant for most localities. The professional fee can be allowed to remain constant with the figures as shown in the schedule. This leaves the compounding fee as the only variable, and by proper selection of this fee, the schedule can be adapted to any locality.

The prices given under the compounding fee in this schedule have been adjusted for prices in this intermountain section.

SCHEDULE

(As adopted by the University of Idaho College of Pharmacy)

C—Compounding Fee—35¢ on preparations requiring compounding.
—25¢ on ready-made preparations.

P—Professional Fee

Capsules	1¢ per dose
Charts	1¢ per dose
Emulsions	1¢ per dose
Eye drops	1¢ per cc.
Eye washes	1¢ per 2 fl. drachms
Liniments	1¢ per 2 fl. drachms
Lotions	1¢ per 2 fl. drachms
Mixtures	1¢ per dose
Nose drops	1¢ per 2 cc.
Nose sprays	1¢ per 2 cc.
Ointments	2¢ per drachm
Ointments, opthalmic	15¢ per drachm
Paints (i.e. sol. gentian violet)	1¢ per 2 cc.
Pills	1¢ per dose
Powders, bulk	6¢ per ounce
Powders, douche	6¢ per ounce
Powders, dusting	3¢ per ounce
Powders, folded	1¢ per dose
Solutions, drop medication	1¢ per 2 cc.
Solutions, vaginal	3¢ per dose
Suppositories	1¢ each

Tablets	1¢ per dose
Throat gargles (low dilution)	1¢ per 4 fl. drachms
Throat gargles (high dilution)	1¢ per fl. drachm
Throat swabs	1¢ per 2 cc.
Urethral injections	12¢ per fl. ounce

S—Selling Price of Ingredients.

Considered to be 33⅓ per cent on the selling price.

5¢ minimum per liquid or solid ounce.

2¢ minimum per one handmade capsule, folded powder, pill, suppository, *etc.*

Note: Characteristic original packages and exceptionally high priced proprietaries cannot be scheduled.

The following examples are given:

1. ℞ Tr. Belladonna 8-
   Cremo-carbonates q.s. 120-
   M. Sig. One teaspoonful t.i.d.p.c.

C	$ .35
P—(32 doses at 1¢ per dose)	.32
S—(cost 32¢)	.48
C plus P plus S equals	$1.15

2. ℞ Phenacetin grs. iij
   Aspirin grs. j
   Caffeine Cit. grs. iss
   Codeine Sulf. grs. ss
   M. Ft. caps ♯ 1 Mitte XV
   Sig. 1 q 4 hrs for pain

C	$ .35
P.....(15 doses)	.15
S.....(cost 25¢)	.37
C plus P plus S equals	$ .87 or 90¢

3. ℞ Elixir Peptenzyme ozc iv
   Sig. One teaspoonful in aqua ½ hr. a. c. t. i. d.

C	$ .25
P	.32
S	.45
C plus P plus S equals	$1.02 or 1.00

It is obvious that if it becomes necessary, on account of economic conditions, to adjust this pricing schedule to fit different localities, it is necessary only to raise or lower the value of C.

It is evident from the recent survey on "Dispensing Pharmacy in American Universities"* by the Problems and Plans Committee of the American Association of Colleges of Pharmacy that prescription pricing does not occupy a part of most curricula. Out of twenty-one schools giving a definition of

*Am. J. Pharm. Ed. Jan. 1940—p. 94-115.

dispensing pharmacy, only four even mentioned pricing as a part of the curriculum. One of these stated, "Pricing of prescriptions and homeopathic pharmacy are considered", indicating that this school considers the pricing of prescriptions no more important than a detailed study of homeopathic pharmacy. Of the nineteen schools stating their objectives in dispensing pharmacy only two indicated pricing as part of their objectives.

The attitude of pharmacy schools toward prescription pricing is indicated in the following quotation from the same article: "Lecture material is given on prescription pricing, but no actual work." At least one school reporting recognized this problem, as evidenced by the following quotation: "Prescription pricing discussions are as potentially explosive as an argument about politics or religion. Our students work in stores, where, for the most part, the price of a prescription is estimated, guessed at, or priced a little below what other druggists are suspected of charging. On our senior files we have prescriptions which were priced (by the druggists who dispensed them) below actual cost as of date of filling. I contend that the average druggist does not respect himself or his profession sufficiently to make adequate charges for his services, knowledge, responsibilities, and materials. Colleges can do much to make students conscious of their professionalism and to realize that it is only honest, just, and their duty to themselves and their profession to charge properly for their compounding services." This is an accurate description of conditions found in some localities, and undoubtedly this school could better the situation if it would accept the problem now it has recognized it.

Dispensing pharmacy should correlate all of the material the student has received in the previous years. Practical experience in incompatibles and in filling a great number of varied types of prescriptions is desirable. However, to fill prescriptions in the laboratory without requiring that they be priced deprives the student of an opportunity to develop a sense of value for the work he turns out. A student entering the field of retail pharmacy without training in prescription pricing is probably just as much at sea in regard to the value of the material he compounds as a student would be in regard to the fundamental manipulations of pharmacy if he were allowed to go through a pharmacy school without a

laboratory course. The student in the first instance has no idea of the selling price of a prescription, while in the second place, the student knows the theory of pharmacy but is unable to transfer the theory to manual dexterity. A failure of the pharmacy schools to recognize this problem and see that it has a more important part in some portion of their curricula is a major factor in current prescription price variations.

After a study of existing conditions, it seems advisable to suggest that the Association accept this problem; that the Syllabus incorporate a simple, flexible schedule in its revision of the basic material for dispensing pharmacy; and that the instructors in dispensing pharmacy place more emphasis on prescription pricing by adopting a pricing schedule that can be adjusted to coincide with the prices in their immediate vicinity. If united action were taken on the problem, it would be only a short time until progress would be made. As the young pharmacists take their places in the profession, replacing the older men, there would be a gradual transition from prescriptions priced by emotion to those established by schedule.

It is difficult to imagine achieving the Utopia in prescription pricing, which would be stabilized regional prices. However, this can be approached by cooperation of the Association, the Syllabus Committee, and in particular by the instructor of dispensing pharmacy.

Apparatus Requisite for a Well-Equipped Laboratory in Pharmacognosy*

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Equipment for investigation in any science must include the tools by means of which we are better able to solve the problems of that science. Since pharmacognosy is interpreted rather broadly in some schools and rather narrowly in others, and since it also has many ramifications, it seems to me that our choice of apparatus must be more or less governed by the end we wish to attain. No matter how limited

*Read before the Conference of Teachers of Pharmacognosy and Pharmacology at the Richmond meeting, May 6, 1940.

the interpretation of pharmacognosy may be, there are three fundamental objectives to strive for, namely, the study of the identity, the quality, and the purity of the drugs of vegetable and animal origin. Our choice of apparatus must therefore be adequate to accomplish these ends. In order that we may better visualize some of this apparatus, I have prepared about a hundred photographs illustrating various types of equipment. These, however, are not reproduced in the Journal because of the cost.

The Laboratory

The first consideration should be the work room or laboratory. It should be equipped with comfortable and convenient furniture. The tables should have running water, sinks, gas, electricity, a reagent shelf, and lockers or drawers for the storage of small apparatus comprising the student's kit. Wall cases for the storage of microscopes and special apparatus, as well as side tables for the use of community equipment, should be conveniently located.

It is desirable for the student to prepare a personal collection of drugs, and for this purpose some sort of container should be provided. Manila envelopes of the Karlton Klasp type, 5 x 7½ inches in size, are convenient for whole drugs, and one-drachm screw-cap vials for powdered drugs. The latter may be kept in telescopic boxes having four trays, each of which holds twelve vials. Thus each box holds 48 samples. Maps, wall charts, projection apparatus, and other teaching equipment should be available.

Macroscopic Pharmacognosy

The identity of a drug may be determined by macroscopic, microscopic, or microchemical means depending upon whether the drug is in the entire or in the powdered form. By the term *macroscopic pharmacognosy*, we generally refer to those items appearing under *description and physical properties* in the official monograph. For the observation of sizes, a small celluloid ruler about 15 cm. long, calibrated in millimeters, is sufficient, although calipers of various types may be used. For the examination of surface markings such as grooves, ridges, lichens, apothecia, lenticals and veins, teasing needles, forceps, a razor blade, or knife and a hand lens are useful. For the study of drugs consisting of small units, such as

mustard seed and elder flowers, the low-power binocular microscope presents an excellent three-dimensional picture in which minute parts and surface markings can readily be discerned. Several such binocular microscopes should be available for student use.

Color is determined by the new ISCC-NBS method.[1] This method, together with the new color names devised by the Committees on Color Nomenclature of Vegetable and Animal Drugs of the National Formulary and the United States Pharmacopœia, will be official in the National Formulary VII and the United States Pharmacopœia XII. The system employs Munsell color cards as comparative standards, and of these, six cards are sufficient to cover the color ranges exhibited by 98 per cent of the drugs. The Munsell cards necessary for this work are as follows: R-YR, YR, YR-Y, Y, Y-GY and GY. A number of sets, together with comparison apparatus, should be available for laboratory use. A suitable notebook is necessary for the recording of data and sketches. Sketches may be made in pencil or in India ink, and the necessary materials should be included in the student's kit.

Microscopic Pharmacognosy

Microscopic pharmacognosy deals with those instances wherein the identity or purity of a drug is established with the aid of the compound microscope. For student use, a microscope equipped with low and high power objectives (about 100x and 600x), coarse and fine adjustments, substage condenser, and ocular micrometer (preferably of the *net* type) is a satisfactory instrument. A few stage micrometers are also necessary for the standardization of the ocular micrometers. For advanced work in any of the microscopical divisions of pharmacognosy, suitable research microscopes are essential. These may be of the monocular or binocular type, and may be equipped with various refinements including additional objectives, condensers, dark field and mechanical stage. Lamps for suitable illumination, and other accessories, such as the camera lucida and comparison oculars, are convenient and essential for good work.

Very often the identity of a drug must be established by a

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[1]Inter Society Color Council—National Bureau of Standards method. See Jour. Research. Nat. Bur. Stand. 23, (1939), 355-385.

study of its structure as seen in transverse or longitudinal sections. For the preparation of sections, both sledge and rotary microtomes should be available. For the preparation of rough hand-cut sections for preliminary study, single razor blades are satisfactory and should be included in the student's personal equipment.

Powdered drugs may, of course, be purchased as such, but for the preparation of small quantities of pure authentic powders, hand mills and a nest of sieves are necessary and convenient pieces of equipment. Where laboratories grind their own powders for class use, a variety of small power units of various types may be found on the market. These are also useful for general grinding purposes. It is often advantageous to point out certain features of microscopic structure to small groups of students, and for such demonstrations one of the various types of microprojectors is highly useful.

Microchemical Pharmacognosy

This branch of pharmacognosy concerns itself sometimes with identity, sometimes with purity, and sometimes with quality. In practice, it consists of performing tests with a small quantity of a drug and reagent. These tests may be color reactions or precipitation reactions, or may even be crystallographic in nature. Because small quantities of drugs and reagents suffice, the apparatus is of necessity small in size; test tubes are one-half inch by three inches, and beakers, Erlenmeyer flasks, and separatory funnels are not over 50 cc. in capacity. Other necessary pieces of equipment for student use include tripod, microburner, spot plate, evaporating dish, small funnel, watch glasses, mortar and pestle, graduates, pipettes, stirring rods, a micro-cell, and microscopic slides and cover glasses. The number of tests which can be carried out on a microscopic slide is really amazing. The small apparatus mentioned above requires very little space and should certainly be in every pharmacognosy desk.

In addition to their use in performing United States Pharmacopœia, National Formulary, and other purity, quality and identity tests, microchemical methods are particularly useful in enabling the student to demonstrate for himself the actual presence of various constituents in crude drugs. Many constituents may be isolated from a few milligrams of the

drug by microsublimation and microextraction on a slide and then identified by microchemical reactions. Reagents and stains are required for all microscopical and microchemical work, and for these, dropping bottles of convenient types should be provided. In addition, staining dishes and Syracuse watch glasses are necessary. One piece of apparatus which the pharmacognosist seems to have overlooked is the petrographic microscope. The mineralogist has found it most useful for years and has done a great deal to perfect its application in crystallography. I do not, of course, advocate it as an instrument to be used by the beginner, but certainly no advanced course in pharmacognosy should be without such a microscope. By means of it, one may quickly determine the optical constants of the crystalline material isolated from crude drugs. It is necessary that the student have a knowledge of crystallography, at least as far as the six crystal systems and the common crystal forms are concerned. This is not a particularly difficult subject, and it may readily be taught by means of crystal models of either wood or glass. It is also essential that the student have a knowledge of the principles of the petrographic microscope as well as of the optical properties of crystals so that he may be able to use the various accessories and run the many determinations to which the instrument is adapted.

Analytical Pharmacognosy

The quality and purity of a drug may often be determined by macroscopical, microscopical, and microchemical methods, but such methods are for the most part qualitative. We must therefore adopt the usual physical and chemical methods for the quantitative determination of quality and purity. No pharmacognosy laboratory should be without good analytical balances for the determination of foreign organic matter and for all other gravimetric determinations. An adjustable drying oven for general use and for moisture determinations, crucibles, burners, and other equipment are necessary for the determination of total and acid-insoluble ash. Moisture may also be determined by the toluene distillation method, and for this purpose United States Pharmacopœial toluene traps should be available.

For the volumetric determination of alkaloids the usual burettes, standard solutions, and one of the several types of

pH meters should be available. Percolators, Soxhlet's extractors, and other extraction apparatus, as well as distillation apparatus are necessary for the study of the constituents of drugs. Necessary, also are the usual melting point apparatus, combustion furnace and apparatus for the determination of molecular weights.

The official method of determining the volatile oil content of drugs has been found to be subject to a number of errors. It is being replaced in the National Formulary VII by the Clevenger method. In addition to the Clevenger apparatus, there are other types of volatile oil determination apparatus such as those of Mijnhardt and Wasicky, both semi-micro methods. For the study of the constants of volatile oils, pycnometers, a polariscope and a refractometer are essential.

Very often quantitative determinations are made by colorimetric methods and for this purpose the laboratory should have suitable colorimeters of which there are several types available on the market. The latest device for colorimetric analysis is the photelometer. This instrument is adaptable to a variety of uses and is now a necessary addition to the well equipped pharmacognosy laboratory. For the demonstration of flourescence and for flourescence analysis the Hanovia Quartz Lamp with suitable filters is an indispensable piece of equipment. Fluorescence microscopes are also useful.

Photography

In conclusion, may I say just a word about lantern slides and projection. Certainly no teaching laboratory is complete without photographic equipment for recording the macroscopic and microscopic characteristics of drugs and for general illustration purposes in teaching and in research. For many years we made the regulation lantern slides and used the Spencer delineascope for projection. This is a particularly useful projector since it can be operated by the lecturer. It does not require a darkened room, and in addition any item on the slide may be pointed out with a pencil, the image of which appears on the screen. Even though we make our own lantern slides for this purpose, the process was never particularly economical.

In 1938, we adopted the Argus 35 mm. camera and are now making all our transparencies for projection in this size. The camera is adaptable to any type of photography including

photomicrography. The transparencies may be black and white or kodachrome. Most of the photographs you have seen this morning are enlargements from 35 mm. negatives taken with this camera. Film, if purchased in bulk, reduces the cost of photography to a ridiculously low figure. Thirty-five millimeter work will solve the photographic problems of pharmacognosy laboratory most economically and efficiently.

Required Label Statements Should Appear in the Pharmacopoeia

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The new Federal Food, Drug and Cosmetic Act and its regulations have presented many new problems to those dealing in drug products. Probably Section 502 (f) has caused the greatest degree of uncertainty as to its requirements. This section reads as follows:

> "A drug shall be deemed to be misbranded—
>
> Unless its labeling bears (1) adequate directions for use; and (2) such adequate warnings against use in those pathological conditions or by children where its use may be dangerous to health, or against unsafe dosage or methods or duration of administration or application, in such manner and form, as are necessary for the protection of users."

There are no regulations which aid in the interpretation of the term *"adequate warnings"* and this therefore becomes purely a matter of medical opinion but the following regulations have been issued in connection with the requirement for *"adequate directions for use."*

> Regulation. (a) Directions for use may be inadequate by reason (among other reasons) of omission, in whole or in part, or incorrect specifications of—
>
> (1) directions for use in all conditions for which such drug or device is prescribed, recommended or suggested in its labeling, or in its advertising disseminated or sponsored by or on behalf of its manufacturer or packer, or in such other conditions, if any there be, for which such drug or device is commonly and effectively used:
>
> (2) quantity of dose (including quantities for persons of different ages and different physical conditions);
>
> (3) frequency of administration or application;
>
> (4) duration of administration or application;

(5) time of administration or application (in relation to time of meals, time of onset of symptoms, or other time factor);
(6) route or method of administration or application; or
(7) preparation for use (shaking, dilution, adjustment of temperature, or other manipulation or process).

One can readily see that full compliance with the above is extremely difficult. Of course, in the regulations the word *"may"* appears in the expression *"Directions for use may be inadequate"* etc. and the presumption is that the detailed requirements as to adequate directions for use need only appear on a label when this is necessary for the protection of public health. Manufacturers and wholesalers can readily obtain qualified technical and legal advice as to the proper labeling of their products. Proprietary medicines are generally marketed by concerns having only a limited line—a small number of products. Much time and investigation can readily be used in order to arrive at the correct labeling of such preparations.

Many manufacturers have also made use of the permitted exemption as to adequate directions by use of the phrase *"Caution—to be used only by or on the prescription of a physician"*. In many instances advantage was taken of this exemption for the labeling of drugs and preparations which were clearly intended for ordinary counter sale. By this subterfuge the manufacturer has avoided his responsibility for proper labeling and placed it upon the shoulders of the retailer.

It is evident, therefore, that the retail pharmacist is confronted with a real problem. He dispenses many items each day on which he places his own label and must therefore assume legal responsibility for the wording on that label. Of course, one answer to the problem is to sell only ready packaged drugs. This, however, would result in the loss of the last remaining vestige of individuality and true pharmacy. What then is the answer?

The U. S. P. and N. F. at present state the dosage for each drug and preparation used internally. This was adequate information for the protection of the pharmacist and the public up to the time of the passage of the new law. Now that a simple statement of the average or official dose of a product is no longer sufficient label information for many products, it would appear highly desirable that the dosage

statements in the next revision of the U. S. P. and N. F. be amplified in all particulars so as to give all necessary information for proper labeling as required by the new drug act. The assumption has always been that the U. S. P. dose was a safe dose for the average adult. Since this appears no longer to be so and since elaborations appear necessary for the protection of the consumer, certainly our official compendiums should give the information to meet these requirements.

This information should not, however, be limited to the requirements for *"adequate directions for use"* but should also include the adequate warnings against use in pathological conditions and by children where harm might result.

This would not be entirely a new procedure or policy. For instance in the present U. S. P. we find the following:

Under Dilute Hydriodic Acid:

CAUTION—Do not dispense Diluted Hydriodic Acid or employ it in the preparation of other products, if the acid contains free iodine.

Under Ether:

CAUTION—Ether to be used for anesthesia must be preserved only in small, well-closed containers, and is not to be used for this purpose if the original container has been opened longer than twenty-four hours.

Under many poisonous drugs:

CAUTION_____is extremely dangerous.

Under Arsphenamine:

Average dose—CAUTION: Intravenous, Metric: 0.4 gm.—Apothecaries, 6 grains. Prior to injection the solution must be alkalinized with 0.85cc. normal sodium hydroxide for each 0.1 gm. of Arsphenamine.

Under Carbon Tetrachloride:

Average dose—CAUTION: As an anthelmintic for adults, single dose, 2.5 cc.—Apothecaries, 40 minims.

There are, of course, many other illustrations of a similar nature. These *"cautions"* or *"warnings"* at present are not adequate or sufficient in number to meet the requirements of the new act and it would seem advisable therefore in future revisions of the U. S. P. and N. F. to refer this matter to a sub-committee of Revision Committee members whose duty it would be to provide adequate warnings for the labeling of all official products. Such information, both as to dosage and warning statements, would be of great practical value and would also provide a basis for the labeling of non-official products. The U. S. P. and N. F. revision committees should assume this responsibility as a great service to pharmacy and the public.

Women in Pharmacy in Puerto Rico

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The entering of women into pharmaceutical work in Puerto Rico is of recent date. It has been a part of a trend since the turn of the century, when women began to enter practically all of the professions. In fact it was not until the United States took over the Island that women became interested in pharmacy. Pharmacy has, however, remained predominantly in the hands of men. A brief historical resume will be helpful in understanding the present day conditions.

Before the nineteenth century the pharmacists of Puerto Rico were men from Cuba, Spain, France, and other foreign countries. In some cases there were natives who pursued their studies in these countries. As there were no pharmacy schools in the Island, pharmaceutical instruction was undertaken by members of the practicing profession. The instruction consisted chiefly of practical instruction in pharmacy. A complete professional training was not possible.

About the middle of the eighteenth century a general demand arose for some legal standards for the practice of pharmacy. The first ones were dictated by the Spanish government. The requirements were four years of practice, during which time the candidates were to pursue certain studies in natural history in the first year, chemistry in the second, materia medica in the third, and galenical pharmacy in the fourth. Before being admitted to practice, the student was required to take a written and an oral examination covering these subjects.

Foreign pharmacists, principally French, Danish, and Swedish, continued to enter the Island, up to the time the United States took control. Then the Spanish organizations, for a brief time, came under the control of an institution of higher learning, but the educational standards remained the same.

In 1913 the College of Pharmacy of the University of Puerto Rico was organized and pharmaceutical training was improved. At this time women began to enter the pharmaceutical profession as well as the other professions which had until that time been considered as fields for men only. This

was in direct contrast to what took place in the teaching profession. Public school teaching had, for a long time, been dominated by women. In recent years, an increasing number of men have entered the field. The following table gives the number of students and the percentage of women graduating each year since the establishment of the College of Pharmacy.

Year	Men	Women	Percentage of Women
1915	8	4	33.33
1916	8	5	38.5
1917	8	2	20
1919	3	1	25
1920	6	3	50
1921	6	10	62.5
1922	8	8	50
1923	18	7	28
1924	7	1	12.5
1925	5	0	0
1926	4	2	33.33
1927	11	6	35.3
1928	8	3	27.3
1929	11	5	31.2
1930	6	5	45.5
1931	0	4	100
1932	5	2	28.6
1933	7	1	12.5
1934	8	7	46.7
1935	7	5	41.7
1936	9	13	50
1937	9	8	47.1
1938	12	8	40
1939	8	12	60
1940	7	5	41.7

This data shows a large increase in recent years. The same is true in medicine, dentistry, and law, and a few have been graduated from the College of Engineering.

The women graduates find good positions as chemists, clinical analysts and pharmacists in government hospitals and in drug stores. It is a noteworthy fact that women graduates who become owners of pharmacies in the Island have demonstrated great ability, professional interest and a good understanding of pharmaceutical business methods. The mere fact that women enter the College of Pharmacy in such numbers would seem to indicate that their efforts are meeting with success in the practical pharmacy fields.

What Constitutes a Fair Examination?*

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Obviously the question in the title of this paper raises another question—Fair to whom? Fair to the candidate taking the examination or fair to the public whom the examiner represents? It must be fair to both. An examination which admits to practice an unqualified person is unfair to the public, and an examination that debars a qualified person is unfair to the applicant. So it seems to me that the examiner in pharmacy has a dual obligation and he will be remiss in this unless he keeps both the public and the candidate in mind.

For the moment we must confine our attention to the candidate. Let us see if we can define a fair examination having in mind the candidate. With apologies to Dean Lyman of the University of Nebraska, I am going to define a fair examination or a perfect examination, if such a thing is possible, as one which will best test the qualifications of the candidate to serve the public.

Before we proceed to consider a fair examination I think it well to mention the two basic types of examinations—the civil service type which has as its objective the selection of the best qualified from a number of applicants to fill a particular position; and the licensing type, which has as its purpose the prevention of the unqualified from practicing. The latter, of course, is the type which concerns us here because state examining and licensing boards came into existence as a part of the police power of the state for the protection of the community against the danger of the incompetent from practicing his trade or profession.

The Examiner

Just as water will rise no higher than its source, so the examination will be no better than the examiner who prepares the questions and grades the answers. Even the finest education and the broadest experience does not necessarily qualify a man to give a competent examination. These are the basic things, but of themselves are not sufficient. There is no course available which one may take to train himself in

*Read before the 1940 meeting of District Number 4, Boards and Colleges. Mr. Adams is a member of the Illinois Board of Pharmacy.

examining. It may be assumed that one has the requisite education and experience. What then can he do to improve himself as an examiner? He should do just as anyone else would do when confronted with a new job. He should study the needs of that job, master the fundamentals in so far as possible, and strive constantly and conscientiously to perfect himself for the work he has to do. I have found one of the greatest helps is to lay out a plan or pattern and then follow this general plan, improving it as I proceed. This plan or framework is a little difficult to specify definitely, but it corresponds to the first rough drawing an architect would make for a building. The examiner should have some sort of framework into which he will fit his questions or he may find himself in the position of the architect who designed a mansion and left out the bathroom.

The First Step

The first step an examiner must take is to establish in his own mind what he regards as the minimum standard in his subject. He must establish a *dead line* below which the candidate must not go if he is to be granted a license. No two examiners will agree upon this minimum requirement. That is not necessary. But having done this he must proceed to outline his examination and distribute his questions so that the ground covered will adequately test the applicant's fitness to practice pharmacy.

Quality of the Questions

Here is the bone and sinew of our whole examination. Reams have been written on good and poor types of questions. I pose as no authority on this subject. I have my own ideas the same as you do. All I would like to do is to suggest that when you have written a question and its answer, try and look at it through the eyes of the man being examined. Does it mean to him the same as to you? Is it capable of several interpretations? To illustrate, I once asked a question like this, *To what type or class of drugs do the following belong,—aloe, copaiba, myrrh and acacia?* I expected an answer like,—dried juice, oleoresin, gum-resin and gum. I got,—*cathartic, blennorrhetic, carminative and demulcent.* The candidates interpretation was justifiable. The only kind of question I particularly resent is the one that can be answered by a simple

yes or *no*. According to the law of averages the candidate can guess fifty per cent right.

Distribution of Questions

This is probably one of the weak links in our chain. The distribution may vary with the different states. In Illinois one examiner handles toxicology, posology, and jurisprudence and another materia medica. In other states these subjects are all covered by one set of questions. However, after the outposts of the examiners subject have been established, he must then proceed to distribute his questions within the boundaries of that subject, so that the applicant shall be tested in the subject or portions of the subject which the examiner deems necessary to determine his fitness. How shall questions be distributed? Fundamentally, they will be based upon the two national standards, the United States Pharmacopœia and the National Formulary. In addition to this, I think there should be occasional questions on the New and Non-official Remedies which has frequently brought into the foreground medicaments which subsequently have been admitted to the official standards. Moreover, I think an occasional question on important proprietary medicinals such as sulfanilamide (now official in Supplement II) and insulin should be asked in order to remind the candidate that he must keep abreast of pharmaceutical progress. There should not be enough of these *special* questions to be a dominant factor in the passing of the candidate. Following this same thought, I think we should as examiners, give some attention to the official remedies that have been stressed by the committees of the United States Pharmacopœia and the National Formulary. It is better to ask questions on important drugs than on relatively unimportant ones. For years we druggists have been urging upon physicians the importance of prescribing the preparations in the national standards. I think it is up to us as examiners to set an example by selecting the material for the examination for licensure from the same standards. Candidates have studied the official standards in conjunction with different texts and under different teachers. Texts are not uniform and teachers have different viewpoints. The candidates therefore have different viewpoints and the examiner must be both liberal and cosmopolitan when he undertakes to prepare examination questions that will be fair to the group that is to be examined.

The distribution of questions is an important matter. I will use my own subject, materia medica, to illustrate. Since in Illinois toxicology, posology and jurisprudence constitute a separate examination no reference is made to them in the examination on materia medica. There are four sources of drugs,—vegetable, mineral, animal, and synthetic. An average materia medica examination will show a leaning toward the vegetable group, that seems natural but it distorts the examination. A rough count of the basic material of the United States Pharmacopœia shows that approximately 47 per cent of the preparations are vegetable, 26 per cent mineral, 10 per cent animal, and 17 per cent synthetic. This does not include preparations like tinctures, fluid extracts, and spirits. In round numbers one-half of all the preparations are vegetable, one quarter are mineral, and the animal and synthetic combined make up the other quarter. This is the framework I use in preparing an examination. It permits a fair distribution, allows for diversity, avoids monotony and by a little effort avoids repetition. Using this plan, the following distribution of questions is made.

Therapeutic definitions	4	questions.	
Vegetable drugs	8	"	(2 N.F. & 6 U.S.P.)
Mineral drugs	4	"	(1 N.F. & 3 U.S.P.)
Animal and synthetic drugs	4	"	(1 N.F. & 3 U.S.P.)

By this grouping the United States Pharmacopœia comes in for 75 per cent of the examinations and the National Formulary 25 per cent.

I would like to stress the point that as many questions should be asked as the time allowed for answering will permit. A skimpy examination is as unfair to the candidate as it is unrevealing to the examiner. In Illinois, in materia medica, twenty questions are given. Most of these contain five subdivisions, a potential of one hundred single questions. The time allotted is two hours. I find that the candidate who knows his subject can finish comfortably in this time.

After the books are graded a tabulation is made and the results reduced to percentages so I know what percentage of the class received 100-80-60-40-20 or 0 on each question. By making this tabulation, unfair questions will immediately show themselves and are either counted out or allowances made for them. In order to visualize the results more clearly a graph is prepared which shows the dispersion of grades more

clearly, the theory being that the standing of any group of individuals should conform to the normal probabilities curve. If the arithmetic average and the grade of the median or middle man coincide or are within a few points of each other, the examination is fair and the class an average one. However, if the line runs all over the graph and the arithmetic average and the median are far apart, either the examination is not fair or the class is not an average class.

I would like to make a suggestion and trust that my colleagues will give it serious consideration as an experiment. I would like to exchange questions with other examiners in materia medica, the range of whose topics agree with my own. I would like to have some examiner in District Number 4 prepare a set of questions and a key and forward to me in ample time for printing before any given examination. In turn I will prepare a set of questions and a key and forward to him in ample time for his examination. I will use his questions and grade according to his key and I shall expect him to do the same with mine. The details can easily be worked out. I am making this suggestion with the firm belief that such an exchange of questions, bringing in new angles and viewpoints, will make me a far better examiner in materia medica than I now am.

How Can Pharmacognosy Be Correlated with Courses in Pharmacodynamics and Pharmacology?

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This paper is, in the main, a plea for a new deal in the first course in general pharmacognosy. It is felt that such a reorganization, to be outlined subsequently, will not only provide a closer correlation with pharmacodynamics and pharmacology, but will add greatly to the interest in pharmacognosy as a course. Pharmacognosy is usually described as a study dealing with the origin, anatomical structure, chemical constitution, and action of crude drugs. From this definition

one would naturally assume that each phase of the work would receive an equal share of emphasis. As a rule, this has not been true in the past. Our early pharmacognosists have been, to a very large extent, men trained as botanists; consequently, the greatest attention has been given to the origin and anatomical structure of crude drugs. This was not an accident. At one time pharmacists were actually engaged in the identification, collection, curing, preservation and dispensing of a large number of crude drugs. It was necessary, then, that teachers of pharmacognosy approach the subject from a botanical standpoint. But now, with the growth of large metropolitan areas, the collection of crude drugs has been forced into the hands of those who are willing to make a specialty of that phase of professional pharmacy. In addition, with the trend toward the usage of isolated constituents, there has been a decided decrease in the number of crude drugs dispensed. Thus the average pharmacist of today has been relieved of these early duties as outlined above. He cannot so function even if he had the desire.

New trends in a profession must be recognized and directed by the schools of that profession. But the changes in our pharmaceutical curricula have not kept apace with the changes in the actual practice of pharmacy. The courses in pharmacognosy provide an excellent example. Many schools are still trying to make expert plant anatomists out of the undergraduate pharmacy student through the same old pharmacognosy courses of years ago. This is still being done in spite of the fact that only those who find their way into the specialized fields of drug collection, and those who become teachers of pharmacognosy can hope to have any great need for the knowledge of the origin and anatomy of drug plants. Would it not, then, be logical to reserve a good share of this phase of the work in pharmacognosy for development into graduate courses to be made available to those few who expect to make a definite use of this type of information? Such a change will provide a way for the reorganization of the present undergraduate courses in pharmacognosy. Now, time can be found to give greater emphasis to chemical constituents and actions of crude drugs. Since pharmacology has assumed in our schools of pharmacy, a major course role, it would seem logical that the pharmacognosist should favor the chemical method of presentation. It is true that the chemical method of classi-

fication of drugs is not perfect, but no classification has been found that will measure up to such a standard.

Assuming the selection of the chemical classification, the drugs to be considered can be grouped according to the chemical nature of their outstanding constituents. Each group of drugs, such as the alkaloids, glucosides, and tannin-bearing plants, should be preceded by a well rounded general discussion of the type of constituents. This material is offered in some schools under the separate title of plant chemistry, but its initial presentation with pharmacognosy appears to be more logical. More advanced plant chemistry courses can still be given. As to the individual discussion of each drug composing the different groups it should be limited to official names, origin, part used, constituents (including assay), properties and dose. In addition sufficient macroscopic description to enable identification should be desirable. But such items as family characteristics, impurities, ash content, habitat, microscopic description and a good share of the macroscopic description should be reserved for graduate courses in pharmacognosy. Much of the dissatisfaction with pharmacognosy on the part of the student has come from the fact that he has been deluged with details, digestion of which is both hopelessly beyond human capability and is very largely unnecessary today. With the deletion of microscopic description from the course in pharmacognosy, changes in the laboratory work must also be made. Here again the emphasis should be on the chemical aspect of pharmacognosy, such as type reactions of alkaloids, glucosides, tannins, resins, gums, volatile oils, tests for the presence of poisonous crude drugs, chemical antidotes, and isolation of drug constituents.

Such a foundation, built by the use of the chemical method of presentation of pharmacognosy, would be ideal for the subsequent studies of pharmacodynamics and pharmacology. Correlation between these more advanced subjects and pharmacognosy can now be easily effected. As a rule, the pharmacologist finds it necessary to introduce a discussion of the action of a crude drug with a review of its chemical constituents. Information germane to pharmacogonsy and pharmacology such as the effect of decomposition on drug action (old solutions of cocaine and tannin), the effect of colloids on the action of drug constituents (opium and irritants), and the effects of optical isomerism on resultant action (hyoscyamine

and atropine), always receive attention. In addition, such subjects as solubilities and incompatibilities afford grounds for correlation. In this way the studies, pharmacognosy, pharmacodynamics and pharmacology, would be very definitely tied together. Such a procedure, of course requires that the pharmacologist be familiar with pharmacognosy. This is not always true when the courses in pharmacology and pharmacodynamics are given outside of the school of pharmacy, and is a definite argument in favor of pharmacy developing its own courses in these subjects.

This proposed method of presentation of pharmacognosy is offered as a partial answer to the question used as a title for this paper.

The Place of Bioassay in our Pharmaceutical Curriculum*

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According to the 1937 survey by Dille, ten schools of pharmacy gave separate courses in bioassay. Undoubtedly, in a large proportion of those schools that gave courses in pharmacology some mention was made of, and simplified laboratory work or demonstrations given in the bioassay of digitalis, insulin, ergot, the arsenicals and vitamins A and D, and perhaps others. Although the number of drugs which are assayed by means of animals is much smaller than the number assayed by chemical procedures, the examples just given indicate that bioassay or toxicity determination is needed for some of our most important and widely used medicines. No doubt, as more hormones and vitamins are being discovered, many new methods will be added at least until the substances can be prepared in chemically pure form.

The main question seems to be whether it is reasonable to spend a large number of hours upon the chemical methods of assay and to neglect or give only slight attention to the bioassay and toxicity determination of this smaller series of drugs of first rate importance. Additional weight upon the

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*Read before the Conference of Teachers of Pharmacognosy and Pharmacology at the Richmond meeting, May 6, 1940.

inclusion of biological assay methods in the pharmaceutical curriculum is given by this statement taken from one of the replies to Dr. Dille's inquiries: "Research in pharmacology in pharmacy schools should be mainly along the lines of quantitative biological estimation of drug action. This is especially the pharmacist's field, and one which the physician cannot conveniently pursue."

Concerning the teaching of such a course in bioassay, it is essential that the person who teaches it be properly trained in physiology and pharmacology, and also that the students shall have at least a fair preliminary knowledge of these fields, including actual laboratory work in both subjects. Dille's survey indicates that more than half of the schools of pharmacy give laboratory work or demonstrations in teaching pharmacology. This course usually was preceded by courses in zoology or biology as well as physiology, although apparently more schools gave laboratory work with pharmacology than with physiology. Not only is it necessary for the teacher in bioassay to be well acquainted with physiology and pharmacology, but a good working knowledge of simpler statistical methods must also be included. In order to reduce the number of experimental animals and consequently also the time used in the tests, it is necessary to use more involved mathematical methods to get accurate comparisons between the unknown substance and the proper reference standard. It is therefore necessary in this field to sift out constantly the new methods, choosing the ones more readily understood by the students, so that too much time will not be spent in attempts to master the complicated mathematical manipulations.

Having given some of the reasons for our belief that pharmacy students should become better acquainted with bioassay, the following will better define the place it has been given in our own curriculum. In addition to the official bioassay methods we have included others upon digitalis, insulin, posterior pituitary extract, local anesthetics, autonomic drugs, central nervous system stimulants, organic arsenicals and the opium alkaloids, although of the unofficial methods not every one has been given each year. With most of these methods it has been considered essential first to run a preliminary, and later a restricted dosage test, and often a check

has been made upon the uniformity of the animal stock by using the so-called cross-over method. In the latter case, one group is first given the unknown drug, and later on the reference standard, and *vice versa* for the second group of animals. It is only by such repetition that the students really become acquainted with the methods.

The laboratory guide that we have used is the one by Professor J. M. Dille; it is written primarily for students of pharmacy and it was our privilege to make a few suggestions during its preparation. The laboratory manual by Dr. J. C. Munch may also be found suitable. As a text we have adopted "Biological Standardization" by Professor J. Burn; from this book we have used some of the less complicated mathematical methods as well as assays not found in our laboratory manual.

In order to give our students the best possible teaching, it has been found a good investment to have built in our basement a large tank in which the temperature of the water can be controlled readily with suitable limits, say 10 to 50 degrees Centigrade. About two hundred individual frog cages can be accommodated. The tank has also been found of great value in carrying out research work upon digitalis by some of our graduate students. From this slide (lantern slide shown at the meeting) one can see work going on using the tank and also the commodious frog storage box which we have had constructed recently to store about eight hundred frogs in running water at 10 degrees Centigrade for a week before carrying out certain experiments involving pharmacopœial revision work. This frog cabinet also helps to cut down materially the frog mortality during our hot summer months. The water tank is also used for the insulin convulsion method in mice, each mouse being placed in a large weighted beaker. We have also secured the special apparatus necessary for conducting the epinephrine blood pressure determination, the tests upon the oxytocic and antidiuretic action of the pituitary, the blood sugar analysis for insulin and the cat method of digitalis. The remaining equipment consists of cages of suitable sizes both for the acute toxicity tests and for keeping animals on vitamin deficiency diets; also special balances for weighing the drugs and the animals. In view of the high expense of the vitamin A deficiency diet of the

U.S.P., we have substituted a slightly less expensive one from Burn's book; the results apparently were typical with this substitution.

Because many of the assays extend over a number of hours, the main work is arranged so as to be conducted over a seven hour period; this includes the time necessary for discussion of the methods and suitable mathematical treatment of the data. The work is arranged so that half the students will always remain to keep the animals under proper observation. At the end of the course, the student is expected to be able to give a running, orderly and critical description of each of the methods studied, as well as to answer any specific questions. Although students in such tests carry out the simpler calculations without aid, we have allowed them to use their texts and notes for the more involved methods of calculations, such as determinations of the standard error and its significance or the so-called Behrens' method of determining the average fatal dose; this method had earlier been employed by Lang and Dragstedt in this country, but was elaborated on by the German scientist.

According to our impression, the students, on the whole, have been even more interested in the course in bioassay than in that of general pharmacology. The bioassay course has been found not only of special value in training students for their chosen profession, but also of particular value in preparing some of them for carrying on graduate work in the field of bioassay. In fact, work in this field has been found very suitable in providing material for a master's thesis.

In conclusion we wish to reiterate that it seems essential that no student should leave the pharmacy college with an extensive one-sided knowledge of chemical assay methods, but he should have an equal opportunity to become acquainted with the biological methods of assaying the very important drugs which cannot be properly evaluated by chemical means. This also gives him familiarity with toxic symptoms from various drugs and a clearer picture of the more common hormone and vitamin deficiency diseases. Only thus can he secure a sufficiently balanced knowledge to enable him to explain and discuss any question that his ever more informed customers or his neighborhood physicians may care to ask him.

A Practical Viewpoint in the Teaching of Pharmaceutical Economics*

FREDERICK D. LASCOFF
New York City

It is a very simple thing to adopt a title and write a paper. The real problem is to keep within the allotted time when one who is a teacher and a practicing retail druggist (a Dr. Jekyl and a Mr. Hyde combination) has so much he would like to say on the subject.

At the outset. I should like to have it understood that I much prefer to approach present day problems as a realist. We all agree that the time-honored profession of pharmacy is being recognized more and more as a public health profession. We must also realize that serious economic problems are staring us in the face more frequently, and we as teachers of pharmaceutical economics are entrusted with the problem of impressing the pharmacy student with the necessity of recognizing the practical problems of the day in order to cope with them in pursuing a career. Therefore, it is essential that we as teachers, keep abreast of the practical problems of the times and consider carefully the direct effect they may be expected to have on the business of the retail pharmacist. The importance of this was illustrated by Dr. W. H. Stoner at Minneapolis in 1935 when he discussed *Teaching the Commercial Aspects of Endocrines.*

One of the most important examples among the more recent developments which affect the distribution of drugs and medicines by pharmacists, is the enactment of new federal and state food, drug, and cosmetic laws. The average consumer is learning a great deal about drugs and medicines and the treatment of disease from the new labels which manufacturers must place upon their products because of these new statutes. No longer will they be misled to expect the impossible in the way of results, for drug labels under the new law must be specific and accurate and must state the therapeutic limitations of products. Extravagant claims, misleading descriptions, and inaccurate statements are fast

*Read before the Conference of Teachers of Pharmaceutical Economics at the Richmond meeting, May 6, 1940.

disappearing from the labels of products which the public buys for self-medication.

Through the labels, the public is learning not to take cathartic or laxative drugs when one has any symptoms of appendicitis. It is learning that the frequent or continued use of a laxative may result in a dependence on laxatives, the so-called laxative habit. It is being told that mineral oil should not be taken directly before or after meals. It is being warned that nasal drops and sprays should not be used for infants except on the advice of physicians. It is being told not to use any cough medicine for more than ten days without consulting a physician. It is being told not to take more than a definite number of doses of various headache preparations a day, depending upon their bromide and acetanilid content. It is being warned that vermifuges should be taken only under the supervision of a physician. It is being taught to recognize its own idiosyncracies to various drugs. Information as to what a product is good for is being given. Such words and phrases as *cure, specific, positive to relieve,* are being abandoned and such ones as *an aid to* and *useful in the relief of,* are now being used. Such terms as *aches, pains, dizziness, back pains, pulmonary disorders, skin infections, skin eruptions,* and *other skin troubles,* are being eliminated because they are ambiguous. A label today must state the specific ache, pain, infection, or irritation for which a product is of value. Adequate directions for the use of a product must appear on its label. No longer can a label read, "Dose for children in proportion to age," and leave it to a mother to try and figure out how much a child should have. The manufacturer must tell the purchaser exactly how much to give to children of various ages. The name of the product, too, must be accurate. A preparation cannot be called an *eczema lotion* or a *rheumatism compound* unless it actually is effective in the treatment of the condition named. A product cannot be called a *vegetable compound* if it contains other ingredients than those of vegetable origin. It cannot be called *aspirin compound* if its action is due to other drugs in addition to aspirin.

The result of these new labeling requirements is to tell the public exactly what a product is, what it contains, what it is good for, how it should be used, when it should not be used, and who makes it. Never before has such a safeguard

to the public been thrown around the sale of drugs and medicines. It is only natural that these new labels will raise many questions in the customer's mind, and it will be up to pharmacists to advise him correctly in the use of the products they sell. The statement of the ingredients which must appear on the label of a drug product may not mean much to the average purchaser, but it does to the pharmacist. His knowledge of the drugs in a preparation, makes it possible for him to give advice intelligently.

Aside from the increased responsibilities which these new labeling regulations place upon the pharmacist to assure the proper use of proprietary medicines, we must ask ourselves, *What effect will this new law have upon the buying habits of the American public?* Any change in the consumer's buying habits will certainly be reflected in changes in the practice of pharmacy and we must anticipate these factors in order to adjust ourselves to them. In my opinion, the new, comprehensive labeling requirements will definitely discourage self-medication. The average individual will not be so likely to treat his own cold when he reads the label of the package of cold tablets and learns of the potential dangers in taking potent medication without adequate medical supervision. Furthermore, the demand for accurate, truthful, specific statements regarding the value and use of drugs and medicines will debunk many of the consumer's fantastic ideas of how easy it is to cure themselves of all sorts of diseases. They will realize that the only logical method of treating disease is through skillful diagnosis and adequate medication and that the physician is the only one who is competent to advise them in this regard. As a result, I believe that there will be a decrease in over-the-counter sales of drugs and medicines and an increase in the dispensing of prescriptions.

There are many other timely problems that could be discussed. It is sufficient at one time to stress the important changes in the practice of pharmacy that are being brought about by the changing of the character of the labeling of products. We must impress students with their responsibility to the consuming public as professional pharmacists and we must also impress them with the fact that they can only be successful professional pharmacists if they follow sound business practices which will enable them to render pharmaceutical services economically.

English in the Pharmacy College

PAUL J. PHELAN
College of Pharmacy, Fordham University

An acquaintance of mine once told me of his start in the profession of law. "On the eve of starting classes at Harvard Law School," he said, "one of the professors gave a talk on what a man should have had as preliminary studies. Latin? Mathematics? English History? None of these. Rather, 'a clear, forceful, interesting use of the English language'." That incident occurred twenty-four years ago, but it is still fresh in my friend's memory.

Today there is no doubt that English is an important subject for a lawyer. Indeed the trend nowadays is toward recognition by *all* professions and professional schools that the phrase "professional man" connotes not only specialized knowledge, but also a cultural background and a facility in expressing ideas. The doctor, the lawyer, the dentist, the engineer, the *pharmacist*, is not only a specialist in a particular field; he is also a professional man, an intangible title that indicates he is set apart from the ordinary everyday business world. What sets him apart? There are plenty of specialists in this world of ours, yet not all are "professional men." The differentiating note between a professional man and a specialist will, I think, be found in the intellectual background of each. And I do not hesitate to say that cultural background fostered by wide reading and facility in expression acquired by constant practice are the determining factors.

Now the important fact to determine is how the doctor or the lawyer or the pharmacist is to go about getting this culture and ability to express himself. A lawyer or a doctor usually has had some college training behind him. This is becoming more important since men with the bachelor's degree (with good backgrounds in English and the "arts" subjects) are being looked on with greater favor by law and medical schools than ever before. But a pharmacy student very often has not the same background of liberal training. Therefore, it is the duty of the professional school to afford him this opportunity. At Fordham we believe we were among the first to realize that the pharmacist, as a truly professional man, was in need of such a background. Our English courses are planned to give the student that intellectual broadening

and that power of putting his ideas into written or spoken words which mark off the professional man from the mere specialist or the run-of-the-mill business man.

In the first place, I always keep in mind Francis Bacon's dictum: "Reading maketh a full man; conference a ready man; and writing an exact man." These are the three purposes of our course in English, and they sum up the marks of a really educated and cultured man.

As far as reading is concerned, at Fordham the purpose of the English work is two-fold. First, the men read for enjoyment; second, they read so that they may get a knowledge of the literary traditions of the English-speaking world of which they are a part. The reading for enjoyment occurs in the first year of English, in which book reports are made from a list chosen solely on the basis of interest. In the second year the outstanding works in English Literature are called to the students' attention and are discussed in class. But perhaps the most important function of both reading courses is to be found in the stress on *method*. Suggestions are made for methodical reading, and reports of an analytical and critical nature are expected on books read. It is hoped that the effects of this stress may be seen in the student's handling of his materials in other subjects.

Writing is something none of us does enough of. Yet nothing makes for better thinking than putting our ideas on paper. No English course is worth anything which does not emphasize the necessity of a clear, forceful, interesting transference of words from the mind to the written or printed page. It is a curious fact too, which I have noticed, that there seems to be a high degree of relationship between a student's ability in writing English and his success in his other studies. At least it seems that the invariable rule is that a student who is poor in English seldom leads the class in any other subject. The reason would seem to be clear. Words are the symbols for ideas. If words are hazily put down, the ideas are hazily related in the mind. English, by stressing the "putting down" of ideas, helps a student clarify his thoughts and methodize his thinking. This function of our writing course is closely akin to the main purpose of the reading course. But as in the reading course we allow room for enjoyment, so too do we allow room in the writing course for what might be termed the "esthetic" part of the student's nature by occasionally

affording exercises in creative writing. Besides affording a natural psychological outlet for men of science, who knows but that this creative writing may some day lead to a best-seller on pharmacy, written by one of our students?

The part of the English work that needs the least apology is the portion devoted to public speaking. The certain mark of an educated man is a favorable answer to the query "How does he talk?" I know an employer, experienced in interviewing job-applicants, who told me that he could talk with a man for five minutes and then tell what kind of cultural and educational background the person possessed. What good will it do our students if they know the United States Pharmacopœia backwards and forwards, if they cannot sell themselves to those with whom they come in contact? It certainly is our duty to prepare men whose personality and facility of oral expression can add dignity and reputation to the pharmaceutical profession.

I think that I can sum up what I have been driving at by saying that English in the Fordham College of Pharmacy is a course which serves as an antidote to narrow specialization by affording a cultural background, and serves too, as an effective help in developing habits of clear thinking, methodical reading, and a capability for intelligent, interesting and forceful expression of thought, whether oral or written. In short, it gives the pharmacy student a certain amount of liberal education, a necessity for any real professional man.

" 'Our women take to education like ducks to water,' to quote President Gonzales again. 'Each year more women than men continue into higher education, so much so that there is already a tendency to discriminate against them in certain professions.

" 'There are some professions in the Philippines which used to be monopolized by males, but which have now become almost exclusively female callings. For example, at this moment, *96 per cent of our students in pharmacy are women;* in education it is 91 per cent; in music, 78 per cent; in the graduate department (mostly education), 55 per cent; in dentistry, 52 per cent; and in the liberal arts, 42 per cent. Nursing, of course, is almost exclusively a woman's profession.' "—(From the National Geographic Magazine, October 1940. "Return to Manila" by Frederick Simpich.)

Editorials

The Fairchild Scholarship

Again the question of the method of deciding on the award of the Fairchild Scholarship has arisen. The records show the subject has been under discussion many times since the establishment of the scholarship in 1916, particularly before the four year course became mandatory for member-colleges. In 1932, a special committee with Professor C. C. Glover as chairman traced the history of the changes and made a number of recommendations which were adopted. Little if any change has been made since that time.

Perhaps there is no better way than an examination but the mere fact that the question has come up again seems to indicate that there is still some doubt.

Frequently in the discussions, it has been pointed out that success in a competitive examination depends too much on cramming, whether the examination be the old-time essay type or the newer so-called objective one. The latter was definitely proposed once, but, granting that there are advantages, it has not been shown that passing such an examination would involve less cramming and more reasoning than the essay form. Thinkers, not memorizers are needed.

It was once suggested that college records be given a value of possibly 25, written discussion of a number of topics chosen from a larger number submitted, a value of 50 and a thesis or published papers a value of 25. The general idea has merit though 25 points on a thesis or published papers does not seem feasible. Very few colleges require undergraduate students to prepare theses and none have published anything.

Perhaps it all simmers down to "much ado about nothing" but $500.00 is quite an item to many students and the possibility of such help toward the expense of a year or several years in graduate work is worth an effort.

The writer has not given thought toward devising a better plan, but it does appear that it may be worth someone's time. It might be a help to know how other groups decide upon awards that are on a competitive basis. Certainly, if there

are any who have some good ideas they should express themselves for the benefit of all.

Zada M. Cooper.

An Old Timer Looks at the Pharmacopoeia

As this is written (September 25) plans are well under way for a meeting of the committee that has been appointed to revise the constitution and by-laws of the U. S. P. Convention. Members of this committee include:

Dr. Theodore G. Klumpp, Food and Drug Administration, Washington, D. C.
Dr. H. C. Wood, 319 South 41st St., Philadelphia, Penna.
Dr. Allen H. Bruce, 139 Forrest Ave., N. E., Atlanta, Ga.
Dr. T. Sollman, 2109 Adelbert Road, Cleveland, Ohio.
Dr. W. A. Grant, 713 East Genessee St., Syracuse, N. Y.
Dr. C. H. Rogers, University of Minnesota, Minneapolis, Minn.
Mr. P. H. Costello, Cooperstown, North Dakota.
Mr. W. F. Rudd, Medical College of Virginia, Richmond, Va.
Mr. Carson P. Frailey, 506 Albee Building, Washington, D. C.

From correspondence coming over our desk as a member of this group, it seems highly probable that a thorough-going job is going to be done. We all trust that their work will result in a complete change from the clumsy, time-consuming and inefficient convention methods that have prevailed for so long.

To keep the records straight. Through the pharmaceutical press attention has been called to the fact that apparently all physician members of the U. S. P. Revision Committee voted for the re-election of Professor Cook as chairman. By the same token it appears that of the 33 pharmaceutical members, 20 of them saw fit to vote for Dr. Jenkins for this position.

Wortley F. Rudd.

Dean Spease to Chicago

The many friends of Dean Edward Spease in Cleveland will be pleased that he has been called to a post of high importance, but will regret exceedingly that it means his removal from this city to Chicago.

He has been dean of the Western Reserve School of Pharmacy for 24 years. His new job is to head a new department, concerned with standards and the relation of pharmacy with the medical profession, in the National Association of Retail Druggists.

Dean Spease is a native Buckeye, and the whole state of Ohio, as well as Western Reserve and Greater Cleveland, have benefited from his activities. He was for several years the chairman of the legislative committee of the Ohio State Pharmaceutical Association, and he is the author of the Ohio law setting up standards for pharmaceutical education.

At Reserve, he gave his school high professional standing and worked out an extremely valuable plan of cooperation with the University Hospitals, a plan which has been widely copied by other hospitals throughout the country.

Chemistry has advanced with amazing rapidity in the last few years, and that is as true in its pharmaceutical branch as any other. The responsibility of the profession, as new products flood the market one after the other, is greater than ever. It is important that beneficial products should not be withheld from a world that needs them. It is equally important that they should not be disseminated until their final and ultimate effects are thoroughly understood.

In this situation, Dr. Spease's new post, coordinating the work of the pharmaceutical and medical professions in the field of standards, he can be of the utmost value to the country. It will be in capable hands.—From the Cleveland Press, July 6, 1940.

Courses in Perfumes and Cosmetics

For a long time the writer has felt that the students in our colleges should be given instruction about many things which the public expects them to supply. The public looks

for intelligent advice from the pharmacist because of his special type of training. Perfumes and cosmetics constitute one group of merchandise about which the pharmacist must know. Many pharmacists have engaged, in a small way, in the manufacture of such preparations as hand lotions and tooth powders. Those who have done so have, undoubtedly, cultivated their interest in professional work and added both to their income and their professional reputation. However, the advertised manufactured products and the manufacturing tax has not helped to encourage this line of endeavor. Nevertheless, many customers feel that the pharmacist is in a better position to give them advice, concerning the cosmetics they buy, than are the girls in the department store who have no training in these lines. Of course this is so, even when the pharmacist has had no special training in the manufacture of cosmetics. Many schools have recognized the importance of this by including work on cosmetics in courses in operating or in manufacturing pharmacy. A few schools have cosmetic courses described as such. Now that the Syllabus is being revised, it seems an excellent time to set up standards for a course in cosmetics that will insure an adequate presentation of the subject. The objectives of such a course should be to show what cosmetics do for the user and the proper methods of use. This would enable the pharmacist to separate the true from the false in cosmetic advertising. At the University of Buffalo the course on cosmetics requires two class room and two laboratory hours a week for one semester. It carries three hours credit. The course is elective for third and fourth year students and is strongly advised for all students planning to enter retail pharmacy. In corresponding with the Committee on Syllabus Revision, I learned that no requests for the inclusion of a cosmetic course in the Syllabus has been made, other than mine. It would seem that this is an opportune time to make presentations to the Syllabus Committee.

Lawrence D. Lockie,
University of Buffalo.

Pharmacy in the Army

National defense is a term that has been kicked about over the air waves by politicians and since the passage of the first peace time conscription act, it has become a subject which is uppermost in the minds of many individuals. To one who has lived for over fourteen years just about forty miles from Fort Benning, Georgia and who has seen miles of trucks, guns and tanks move through to the manouvers in Louisiana and Texas, the army is something that is very real and not something that has been read about or viewed in the newsreels. This reaction to its importance and vastness received quite a setback after reading the article by Second-Lieutenant Glenn K. Smith in the August number of the Practical Pharmacy Edition of the Journal of the American Pharmaceutical Association on *Training Army Pharmacy Technicians.* His answers to the questions, *"Why does the army not have graduate pharmacists; or since it now has commissioned pharmacists why are they not doing the dispensing?"*, seem to me to be both inadequate and inconsistent. He states that it would be impractical from a monetary standpoint to employ graduate pharmacists for nearly four hundred positions that he admits are necessary. Economy is a standard and outworn excuse for not getting something that you do not want or for not doing something that you are reluctant to do. When appropriations are talked of in terms of billions and when reserve officers just a few years out of college are brought in to give R. O. T. C. training at a pay scale which seems almost fabulous to the average faculty member the inconsistency at once becomes apparent. It is also stated that the quantity of work in most of the pharmacies does not warrant the full time services of a commissioned pharmacist. At the same time, the importance and extensiveness of the duties of pharmacy technicians are elaborated in great detail. As far as the time element is concerned, the writer knows of no instance of an army surgeon being reduced to the rank of sergeant because he has only performed one operation a day. Neither have medical technicians been trained to do simple appendectomies or to diagnose and treat minor ills just to cut down the overhead. Some rumblings of dissatisfaction over the nine months technicians course were heard at the Richmond meeting but many individuals felt that it

was better to take a half a loaf than none because some progress had been made in advancing pharmacy in the army. Pharmacy is advancing in the army, yes, but it seems that we are going at a model-T rate in a V-8 age.

George W. Hargreaves,
Alabama Polytechnic Institute.

The Drug Store---A Physiological Institution

This is the day when things "practical" occupy the center of the stage. To get the ear of an audience one must begin by shouting the word "practical." It applies to everything from rail splitting to education. Just now one of the most discussed problems in education is the content of the course of study in the high school. The discussion is being carried on between the university group on the one hand and "practical" school men on the other. The university group maintains that in the high school curriculum we are getting dangerously near the minimum of "academic" subjects, below which it is not safe to go if the student is to enter an institution of the college level. The "practical" school men maintain that the high school should train the student for the field into which he goes, so that he will have some understanding of the practical problems in the "practical" world in which he is to live, and that world for the great majority of high school students is not the college level world. We meet the same problem of the "practical" on the professional level. The demand in pharmacy for "practical" instruction in our colleges has come and is coming from the retail druggist. Some of us may differ as to what "practical" instruction consists of. That ought to be determined by what a drug store is. The British call it a "chemist's" shop. But with the British tradition is strong. A tradition frequently outlives the facts of the case. A drug store from the viewpoint of an apothecary might perhaps have been called a chemist's shop in the days when Scheele was working with nitrogen compounds or Serturner was isolating morphine. But the modern drug store from the viewpoint of the layman is a physiological or in a broader sense a biological institution. When a patron goes into a drug store, whether it is to have a prescription compounded, or to obtain some aspirin for the relief of pain, or some

strychnine to kill the vermin around his place, or to buy a patent medicine, or an arsenical to rid his potatoes of bugs, or some copper carbonate to treat his seed wheat, or a serum to control diptheria, or a hot water bottle, or an ice bag, or a tooth brush, or a glass of coco cola, or a package of cigarettes, he has entered for a physiological reason. What could be more practical then than to include in the pharmaceutical curriculum those biological sciences botany, zoology, pharmacognosy, bacteriology, physiology, pharmacology, bioassay, and biochemistry which are not only essential for the student of pharmacy to grasp the problems of pharmacy, but just as essential for the retail druggist to run his store intelligently and give an intelligent service to the community. Furthermore it is the biological group of sciences and not physics and chemistry that makes pharmacy a public health profession. The value of physics and chemistry to the practice of retail pharmacy has never been questioned. They are essential, so is arithmetic and good English. But it remained for the Commonwealth study to convince the skeptical that in the intelligent functioning of the pharmacist, physiology and the other biological sciences are supreme.

Rufus A. Lyman.

Biology---A Part of a Firm Foundation for the Practice of Pharmacy

"Why do I have to study biology to be a good pharmacist?" This question came from a freshman in a college of pharmacy, and from one whose father, a successful druggist, had graduated from a two year course and had received no formal instruction in biology other than the small amount that had been included in his pharmaceutical botany. The question was probably an echo, because many druggists are asking this and similar questions about subjects now included in the pharmacy course but which may seem rather remote from a modern drug store.

We can answer our freshman in a general way by saying that biology is a fundamental course—that it is part of the foundation upon which more advanced courses are built. We can say that biology bears the same relationship to such courses as physiology and bacteriology as does general chem-

istry to the advanced chemical courses. This may satisfy the freshman, but probably sounds vague to his father, the practical druggist. So let us illustrate by one or two examples.

In biology the student spends considerable time studying osmotic phenomena—what happens to cells when they are put in liquids with a lower salt content, or a higher salt content or the same salt content as have the cells. He observes the behavior of molasses and water separated by a membrane of cells and he studies the theoretical explanation of what he has seen.

From this he should get some notion of the influence that solvent, salts and colloids have on the exchange of materials between living cells and the various fluids with which they may come in contact. Later on when he is studying such preparations as Physiological Solution of Sodium Chloride, U. S. P., or Isotonic Solution of Dextrose and Sodium Chloride, N. F., the significance of "Physiological" and "Isotonic" should be understood readily. In his father's store if a physician who is concerned over the comfort of his patients requests that an eye prescription be made isotonic to tears with sodium chloride so that it will not smart when applied, the student should know not only how to prepare such a solution but he can understand as well what processes in the eye make it necessary to combine the ingredients in the particular proportion.

We might also tell our freshman that biology has a practical value in the drug store apart from the prescription department, but again the pharmacist who feels that he knows no biology might not be convinced easily that such is the case. What practical use can possibly come of a knowledge of the chemical constituents of protoplasm—the stuff of which all cells are made? Within recent years practice of growing plants without soil has received wide publicity, and for a layman who indulges in such activities as a hobby the drug store is a source of his advice and supplies. With a basic knowledge of the chemical constituents of protoplasm the druggist can understand why certain salts are insecticides and vermicides and an important source of revenue, and the helpful druggist has data on the nature of the pests, their feeding and breeding habits and the most effective eradicators. This knowledge is biology—whether part of it was gained from a formal course

or whether it was all dug out of governmental or other publications. Obviously, a single course in biology will not equip a druggist to answer every biological query that may come his way, but some knowledge of the subject may prove useful at the most unexpected times and will give him further sources of available information.

And finally we can tell our freshman that his course in biology has values and here, most of all, our explanation is likely to be questioned. Such values are hard to define, probably because we find it difficult to define culture. But the values exist if we accept Matthew Arnold's definition of culture—the acquainting ourselves with the best that has been known and said in the world. In the field of biology if we know what the great scientific authorities regard as the truth we are able to form more intelligent impressions on affairs of current interest to the pharmacist as well as to everyone else.

If we are familiar with the biological concept of race—a group of people who have a common heredity rather than a group with the same political or religious beliefs—we see through some of the ridiculous statements on races, superior and inferior, that are being made today by those with no accurate knowledge of the subject. If we have even a passing acquaintance with biological science we are able to read understandingly much of the material of this nature in our daily press and in the pharmaceutical publications. And we can understand more fully some of the influences in each of our lives that spring from the fact that each of us is a living being in continuous contact with other living things both plant and animal.

To be honest we will have to tell our freshman and his father, the practical druggist, that a formal course in biology is not essential to make a man a good pharmacist. Some knowledge of biology certainly is necessary and is becoming increasingly more so. For many, this knowledge has been gained here and there throughout the years. With a good knowledge of a foundation course the practical education of a pharmacist along biological lines should be easier and perhaps more accurate. The successful druggist knows that he never stops learning, and all any course in college can do is to point the way.

Richard A. Deno,
Rutgers University.

The Editor's Page

Just as at times I have an urge to give the pastor of my church a personal expression of appreciation for the message of courage which he has delivered as I sat in the pew, so do I feel the urge to express my gratitude to a brother editor for the inspiration which he gives me as I sit at my work table. No single man gives me a thrill of exaltation more times in a year than does Robert L. Swain, when each week I turn with eagerness to *Your Pharmacy and Mine* on the editorial page of Drug Topics. In the September 23rd number of that journal he wrote *"I am one of those persons who feels that the salvation of pharmacy as a worthwhile professional pursuit depends almost entirely upon the integrity and excellence of its educational program. I want to see the retail drug store pull itself up to the level of modern pharmaceutical education, but I doubt if this can be done if the colleges and the stores go about their business more or less unmindful of each other."* The inspiration for this statement by Dr. Swain came in a letter in which the author declared the interests of pharmacy would be better served if in the selection of teachers it was insisted that the prospective teacher should be experienced in the operation of retail drug stores and thus familiar with the problems with which pharmacy is faced.

Every sentence in Dr. Swain's statement is brimfull of common sense and the truth of each, no one can question. No man in American pharmacy is more versatile than Dr. Swain. He lives with, understands, and is amazingly sympathetic with each and every phase of pharmaceutical endeavor. His word carries great weight with all groups and his constant support of pharmaceutical education as a basic factor in pharmaceutical progress has had and is having a powerful influence in bringing about cooperation in the pharmaceutical industry and the support of education by that industry. However, pharmaceutical education, like all other fields of scientific and professional education has been reduced, or shall I say, promoted to a specialty. And so has retail pharmacy. At least, like everything else, it is constantly on the change. *"The operation of retail drug stores"* is a specialty in its own right, and to be still more specific, the *"problems"* which are to be faced differ in every store and in the same store from day to day and from year to year. No one questions that sometime early in the

career of a pharmaceutically trained teacher he should have a drug store experience which would give him a familiarity with the basic problems of a drug store, but to expect him to go back into the drug store as a clerk year after year as some have advocated, *"so as to keep in touch with retail pharmacy"* after he has attained expertness and distinction in his special field of teaching and research, is as ridiculous as it is to expect a teacher of agriculture who has gained distinction as a teacher and research worker in his particular field to go back to the farm and milk a cow, or set a hen, or smell a rotting straw stack in order to keep in touch with the problems of the farm. A few years ago when a personal friend of mine who is a distinguished dean in a distinguished college of pharmacy in a distinguished university told me he had clerked all summer in a drug store in order to get the drug store point of view and asked me if I thought that was a good thing to do, I replied that I thought a dean could do something of far greater value to his students, to his university, and to the profession of pharmacy than that. As a matter of fact, I would prefer to have a teacher of mine go into his laboratory and do something that he had never done before, or go to the north woods and revel in the beauties of nature and refresh his soul by communion with his Creator. He would come back full of vigor, an inspired teacher, capable of rendering a finer service to his pupils and his institution. Such an experience would make him a better teacher than any *"behind the counter"* effort could possibly produce. It is well in this connection to remember what President Edmund James of the University of Illinois said to the writer before the first world war: *"The problem today is to find a teacher in the field of pharmacy whose vision is not bounded by the four walls and ceiling of a drug store."* The teacher of the pharmaceutical sciences must go beyond the drug store and delve in unknown fields, fields which must be developed if pharmacy is to be considered a factor even by pharmaceutical manufacturers themselves, not to mention the necessity of maintaining a respectable position among the public health professions and the general sciences.

Recently President L. N. Duncan of Alabama Polytechnic Institute made the following statement to his faculty concerning the qualifications of *"The Teacher"*:

"The teacher should be fully trained in all phases of the subject which he assumes to teach. He should be master of his field and be able

to present his subject with soul-stirring enthusiasm and power. He should have unquestioned integrity. He should possess real culture and broad learning. In order that he may teach by example as well as by precept he should have a personality that will inspire students. He should be willing to dedicate his life to the institution and to his chosen profession. He should be tactful, courageous, attractive, and possessed of a fine sense of humor. He should not be content with what he knows, but should constantly and persistently seek for additional information and better ways of presenting that information in terms of student needs."

Dr. Henry Van Dyke gave us a splendid picture of a real teacher as follows:

"He keeps watch along the borders of darkness and makes the attack on the trenches of ignorance and folly. Patient in his duty, he strives to conquer the evil powers which are enemies of youth. He awakens the sleeping spirit. He quickens the indolent, encourages the eager, and studies the unstable. He communicates his own joy in learning and shares with boys and girls the best treasures of his mind. He lights many candles, which in later years, will shine back to cheer him. That is his reward.

"Knowledge may be gained from books; but the love of knowledge is transmitted only by personal contact. . . . No one is more worthy to be enrolled in a democratic aristocracy. 'King of himself and servant of mankind.' "

Then President Duncan adds:

"If the institution has been fortunate in selecting its staff in accordance with what I have said under 'The Teacher' and the staff members so chosen have the spirit and attitude which I am endeavoring to set forth here, the matter of tenure of service will take care of itself."

In saying what I have said and in quoting President Duncan, I am not attempting to minimize in the slightest degree the importance of the teacher's relationship to retail pharmacy. I am trying to call to the attention of all workers in all fields of pharmacy, the tremendous load the teacher must bear if he even approaches what is expected of him. And it is a good thing for teachers of pharmacy also to be reminded of what is expected of them by administrators.

I have observed pharmaceutical activities from the sidelines and at a distance for a third of a century and the most hopeful sign I see in these latter days is the crystallizing of a spirit of unity. There is less friction between groups representing different phases of pharmaceutical endeavor. There is a finer spirit of cooperation manifested. There is a greater tolerance toward different points of view. There is a finer fellowship developing among individuals and groups. And if I may say it without seeming to be either sentimental or to

preach, I can feel all these changes taking place within my own self. Dr. Swain never spoke more truly than when he said: *"The teacher and the retailer, arm in arm, can do a heap for each other."* I can only add that I wish I had enough arms so that the manufacturer, and the wholesaler, and the producer of anything pharmaceutical could hook in on me. As it is I am beginning to sense the feel of solid ground under my feet which comes from working and standing together.

The severing of his long connection with Western Reserve University as dean of the College of Pharmacy brought a shock to the friends and colleagues of Edward Spease. Years ago Dean Spease, in the strength of vigorous young manhood, lifted the old Cleveland College of Pharmacy right out of what I called the slums of Cleveland and set it upon the campus of one of America's most dignified, most aristocratic, and most highly respected universities. That was a great accomplishment in itself. And what was even more he got the sympathetic ear and the powerful support of such a man as Newton D. Baker, who at that time was a member of the board of trustees. Through the years that followed, with untiring effort and devotion, he developed a plan of hospital pharmacy instruction in connection with the hospitals in the city of Cleveland, which is unique in the field of pharmaceutical education. He leaves the first child of his own creation as it becomes of age and turns his attention in his prime to another field. His new work has been widely mentioned in general terms in the pharmaceutical press, but because of the interests of the educational group in what Dean Spease has done, there is a keen desire to know something about his plans and objectives in this new field of labor. These he set forth in a personal letter and he was prevailed upon to permit its publication in this issue of the Journal just as he wrote it. (See Gleanings from the Editor's Mail.) When one reads that letter he must realize how well Dean Spease by temperament and training is qualified for the task. His is the pioneering spirit and the job is a pioneering job, a job that has far reaching possibilities for the betterment of the service of professional pharmacy. No finer effort in behalf of professional pharmacy has ever been undertaken than this one, which is sponsored by the National Association of Retail Druggists, and no finer pilot to guide the work could have been found

than Edward Spease. He will have the good will and the moral support of every one who wishes to see the practice of pharmacy dignified.

There is no subject in modern education that is receiving more attention than that of testing. Testing is of no value in itself. What is of value is the use of the knowledge obtained by testing in directing the student in his work. Examinations in college have little value in themselves unless they are used as teaching tools. The pharmacy examination for licensure has a very definite objective, the determination of the candidate's fitness to practice pharmacy. It is no wonder then that the examination is receiving such a wide spread study by both board and college men in order to find a better way of examining than the one that has been in vogue since state board examinations were instituted. *"What is a Fair Examination?"*, in this issue by Mr. A. Lee Adams of the Illinois Board of Pharmacy, deserves careful study. Few examiners have been more conscientious and given the examination more study and thought than has Mr. Adams.

If the Editor was harsh in his criticism of the failure of the west coast pharmacists to support the program of the Pharmacy Section of the American Association for the Advancement of Science at Seattle last summer, it was not because of any bitterness toward any individual or any group. It was due rather to the disappointment of not having pharmacy represented among the other societies at the national meeting. What was said, however, did cause Mr. J. M. Dille to write about the best argument that has ever been published in support of the Subsection on Pharmacy. (See Gleanings from the Editor's Mail.) The statement, that distances in this western country are too great, carries no weight with the Editor. He has seen his friends from Los Angeles on the Mount Hood Highway two thousand miles or so from home, who have motored all that distance for no greater objective than a week end attempt to catch a one pound trout, and they never begrudge the time or money spent. Westerners pay no attention to distance. Dean W. F. Rudd has said that the group that attends the annual meeting of the American Association for the Advancement of Science represent the cream of scientific men of America and he is right. When I see a

program of the Scientific Section of the American Pharmaceutical Association and find one man's name attached to several papers, I have a feeling that one of them could be reserved for the Pharmacy Subsection program to the advantage of both the author and to pharmacy. Dr. Glenn Jenkins, who is chairman of the program committee of the Pharmacy Section, is now calling for papers for the December meeting to be held in Philadelphia.

The production of literature is the thermometer which records the growth and the status of a science. The morale of any special group, whether in the field of science, the humanities, or the arts, is determined by the record of its accomplishments. A literature and a morale, therefore, begins with the recording of history. This makes the appearance of a book, *The History of Pharmacy by Edward Kremers and George Urdang*, an event worthy of something more than a passing notice in a book review column. There are many books and articles that deal with the history of pharmacy in a more or less haphazard way. The value of such publications is not to be minimized. But the great need has been to have a scholarly record of the accomplishments of pharmacists throughout the centuries that could be used in the classroom as a teaching tool. Doctors Kremers and Urdang have produced that tool. Well may the pharmacy student be urged to make this book the central pillar around which his personal library is to be built. In 1921, when the Carnegie Foundation began the study of dental education under the direction of Dr. William John Gies, insistance was made that each dental student should be required at the time of graduation to show that he possessed a personal dental library. It was held in that study, that a personal library was just as essential to the proper practice of dentistry as was a dental engine. When pharmaceutical educators and practicing pharmacists get that same vision of the value of a personal library in the study and practice of pharmacy, the professional attitude will be augmented. The part that the *J. B. Lippincott Company* has played in making possible the new book must not be overlooked. Their financial assistance made it a reality. One thing pharmaceutical educators must learn is, that it costs money to publish fine books and worthwhile journals and a literature cannot be produced unless those who use it and

those who are benefited by it, are willing to give not only moral but financial support to those who make the publication of good books possible.

As a record on another page of this Journal will show, since the publication of the July issue, seven new babies, all girls, have entered the homes of those who belong to the faculties of the Association colleges. Where is the man who would dare to create a slogan: *"The Menace of Girl Babies to Pharmacy?"* How I would have enjoyed being present at all of the christenings. On another page President Gonzales of the Philippines comments upon the success of women in pharmacy and in the other professions in his country. On still another page is an article by Dr. Melendez of the University of Puerto Rico, in which he tells of the remarkable accomplishments of women in pharmacy in the Island since American occupation. And, in a way the best of all, on another page, Dr. J. B. Sprowls of the University of Colorado, presents a paper on *"Women in Pharmacy"*. This paper, Dr. Sprowls writes, represents a study that was planned, organized, and carried out by the young women registered in the College of Pharmacy of his University. As I read the paper, I was reminded of the fact that once upon a time, either Dr. Nellie Wakeman of the University of Wisconsin or Professor Zada M. Cooper of the State University of Iowa (it might have been either or both) said that if we would let the women alone they would take care of themselves. Of this I am now convinced. These reports from the Philippines and from Puerto Rico only confirm the belief I have held for a long time that women are not a menace to pharmacy as some have claimed, and these young women from Colorado have collected data and presented evidence which proves absolutely that pharmacy is not a menace to women.

Rufus A. Lyman.

"Moral and intellectual strength is much more important to the United States than military strength. With our vast resources and impregnable position we are unlikely to be swallowed up even by a combination of three powerful enemies if we understand and believe and have the courage to defend freedom, truth, and justice, the central principles of democracy. This is the vital force of the nation."—President Robert M. Hutchins in the University of Chicago Magazine, October 1940.

Gleanings from the Editor's Mail

Despite the good things offered me in each issue of the American Journal of Pharmaceutical Education, I reserve the reader's prerogative of criticizing the editor when I feel it necessary. I believe it is necessary when considering your remarks about the lack of support for the pharmacy section of the American Association for the Advancement of Science at its June meeting in Seattle. I don't believe your blanket indictment of the educators in this area was quite just. There were several of us who had prepared papers for the meeting and who were just as disappointed as you when it was called off. The relatively few men in this area who are so situated that they can contribute to such programs should also be taken into consideration when offering an indictment of this nature. Lumping the entire Pacific Coast area in the category of available territory from which to draw support for the meeting would give us a great many miles of territory but still very few men from which to draw. I think under the circumstances even the few papers which we did have available made a creditable showing—creditable, I mean, for our country of vast distances and few people. Enclosed is my check for two dollars for next year's subscription to the Journal. Having enjoyed myself by inveighing against the editor, I close with the statement that the Journal is worth a great deal more than two dollars per annum.

Seattle,
August 27, 1940

L. WAIT RISING
University of Washington.

I am sorry this reply has been so long delayed. Since I am not teaching this summer, my office work has been grossly neglected, not through lack of interest but because of attention elsewhere in the University. Your request for my impressions of the U. S. P. Convention calls for some comments which might better be left unsaid. However, there were some events which struck me rather forcefully and I shall be glad to express my opinion regarding them. I cannot refrain from giving vent to the thoughts which assailed me when I found that a group of men gave me a job to do, a job which needed all the backing and cooperation of a strongly organized and closely knit group, only to find that the cohesion of that group suddenly approached zero at the most critical time. I suppose there will never be such a thing as having a convention in which everyone is actuated by purely unselfish motives. It is not human nature. But it does seem that such a work as the United States Pharmacopœia might inspire the best there is in every man or group of men. Frankly, I was amazed at many individuals who sought personal aggrandizement, at least it seemed that way to me. There were some who would not openly take one side or the other but rode the fence, most of them to their sorrow. I have every respect for an openly declared opponent but the mugwumps leave me cold. The incident which impressed me more than anything else was my understanding that the medical group of the Revision Committee voted "by instruction." One of the men who helped me in our little "campaign" approached one of the medical group who happened to be a personal friend and asked him to support our can-

didate. He was told by the doctor that they had already been instructed how to vote. Regular Nazi election! If this is actually true, I am amazed that a group of intelligent physicians are, or have to be, instructed how to vote. Of course, machine politics wield a tremendous power but it can be carried to the point where revolt will occur. It is this sort of thing which arouses the common herd to force through a reformation. I should like to point out that any profession is given the privilege of licensure by the people through the media of their general assemblies, and they expect those professions to render public service as *the people* want it and not necessarily as the profession desires to render it. When professional organization reaches the political machine state and rides rough-shod over the public, it may expect trouble. What the people give, the people can take away. There has been much ado regarding state and socialized medicine during the past few years and in my humble opinion there will be more in the future. Why have delegates and elections if each person is not allowed to vote as he personally sees fit? It is nothing short of an insult to a man's intelligence to tell him how to vote. Looking briefly at the other side of the picture, I enjoyed the Convention immensely. I made many contacts, new friends, and learned many things. To those who held me responsible for occurrences which were not in accord with their ideas and who directed some rather bitter and caustic remarks toward me, I hope they will some time understand that I worked for a principle in which I believed wholeheartedly, that I was *not* personally responsible for all actions of our group, and that if we should happen to be on the same side of the fence I should work just as hard and sincerely for them as I did for the group with which I was associated.

CARL J. KLEMME
August 12, 1940 Purdue University.

I was going to write you that it seemed like six months since the last copy of the American Journal of Pharmaceutical Education, when I picked up your interesting July issue early in August, in the office of Drug Topics, in New York City. Thank you for your interesting comment on page 19. I was surprised to find that Harold Hutchins of the American Druggist, 572 Madison Ave., New York, knew nothing about the American Journal of Pharmaceutical Education and told him so. He certainly should subscribe or exchange or get it somehow. Doctor Newcomb of the National Wholesale Druggists Association told me he keeps his copy at home, distinct from other journals filed in his office. How is that?

FRANK B. KIRBY
September 4, 1940 The Abbott Laboratories.

The copy of the American Journal of Pharmaceutical Education reached me in advance of your letter of the 12th and I immediately acknowledged its receipt. Being quite busy at the time, I laid it aside with the full determination of giving it a careful reading. However, your letter, which reached me this morning, mentioned the two articles, one on page 480 and the other on page 494 and I do want to thank you most heartily for these lovely expressions of the impression gained by Mrs. Lyman and yourself. My one regret was that under the

stress of the activities at the time, Mrs. Royer and I were unable to show you good people some special attentions. However, in the hands of the Rudds and the Winnes, I know that your few spare moments were fully taken up. My hope is that some day you good folks may have an opportunity to come back this way and we shall look forward to the pleasure of extending a most cordial greeting.

Richmond, Virginia
August 14, 1940

WM. C. ROYER, Manager
Hotel Jefferson

A big O. K. for the July Journal of the American Association of Colleges of Pharmacy! How did we get along before the days of the Journal? It ought to have a much larger circulation. The American Association of Colleges of Pharmacy is an association of institutions, not of individuals. Years ago, I suggested an auxiliary of individuals, made up, say, of the complete staffs, high and low, of every member college. There is yet time for such an auxiliary with obligatory membership in it of every individual member of every college, the membership fee to include subscriptions to the Journal. Every college member certainly would profit from the stimulating, informative and educational value of the Journal. I cannot see how any member, in self interest, can do without the Journal. Everyone would recognize the benefit of a subscription requirement, I firmly believe, if properly explained and emphasized. It might be a good plan to solicit reactions from the college deans.

August 27, 1940

FREDERICK J. WULLING
University of Minnesota.

No one is more regretful of the failure of the pharmacy section of the American Association for the Advancement of Science to hold session than we of the Northwest. There are, however, certain reasons for this failure which I feel should be stated in justice to this group. In the first place, the deadline for papers was May 1 and at this time everyone in pharmaceutical circles was concerned with the coming American Pharmaceutical Association and the United States Pharmacopœial Convention and probably did not want to make commitments until these were over. The meetings of the American Association for the Advancement of Science were held only three weeks after the pharmacy meetings and this is a rather short time to recover from the drain on energy and finances which attendance at these meetings entailed. In the second place, while it is obvious that the pharmacy section must be supported by the local group, it must be remembered that our local group is pretty widely scattered. Only four colleges would be included in a radius of 300 miles. To include eight schools, a radius of 1500 miles would have to be taken. It seems that no less than this number of schools could be considered sufficient to support a national meeting since some of these schools, like those in any other group, publish research infrequently and no amount of urging to participate could have been effective. The four schools within the 300-mile radius are enthusiastic in their support of all pharmaceutical activity but our eastern friends must remember that their support entails considerable sacrifice. Like everything else in the Northwest, the distances are magnificent. On May 1 three papers were available from the Univer-

sity of Washington but obviously I could not ask the Association to grant a session for only three papers all from one school. After June 1, one month after the deadline, I received word from Corvallis and Pullman of two papers to be presented by title. This indicates interest and under other circumstances the pharmacy section of the Association probably could have been held. I realize the great value of this section of the American Association for the Advancement of Science. It not only puts pharmacy where it belongs, among the other sciences, but it has broadened the outlook of pharmacy researchers and has made them realize that there are national meetings other than their own which they have an obligation to support. It was with regret that I finally wrote to cancel the pharmacy program.

JAMES M. DILLE
August 28, 1940 University of Washington.

In attempting to make any standardization of examinations for licensure, I believe our greatest difficulty is going to be with the board member who is not conscientious about his work and who treats his job as just a political venture. Looking over a number of board examinations it seems to me that many examiners wait until the last minute to prepare their questions and then pick questions at random from old sets and have no thought for the candidate or for distribution of material. Anyone can throw ten or twenty questions together and call it an examination, but is it? This business of examining is really a profession and should not be in politics, but that is something that I am afraid we cannot do anything about. What is needed the most for board members, is a school of instruction in the whys and wherefores of examining. It is very easy to find fault with things, but if we find fault and can offer a remedy I believe we really have done something worth while. I am in accord with Dr. Swain's idea of having more practical examinations and written examinations relative to the practical work given.

A. LEE ADAMS
March 28, 1940 Glencoe, Illinois.

As you know, I have been given the high-sounding and musical title of Director of Professional Relations. I presume that the title was worked out in keeping with the titles of other men in the organization as for instance, Mr. Christianson is Director of Public Relations or Public Relations Counsel.

Anyway, I can tell you what my purpose is, if not just what I expect to do. You know all about me and what I have done in the past and what I have tried to do, and you are quite familiar with my ideals. In the one talk I had with Secretary Dargavel about this position, he outlined to me what the National Association of Retail Druggists has been doing and is now doing in the field of legislative advancement and protective legislation to look after the best interests of the retail druggists. He further outlined their work along commercial lines and in sales promotion—all of which has been quite familiar to both of us from the pages of the Journal.

There is, however, considerable work in both of these fields that is being done that does not appear in the pages of the Journal as matters

of publicity. Inasmuch as this organization represents by its membership only the retail druggists of the United States and about 30,000 of them, it is its purpose to see if something cannot be done to help the professional side of the business of the retail druggist, to teach him to approach and fraternize with physicians and dentists and to give him help in all such types of campaigns.

This is a wide field, and of course, will give me an opportunity to see if the things I learned in my hospital connections in Cleveland can be utilized to help the retail druggist. It may also serve to help me lift the standards of practice somewhat. This means that I shall be interested in everything that I have been interested in the past, and geographically speaking, this is the ideal place and spot in America from which to work. I wonder if it has ever occurred to you, for I know it did not to me until I came here, that I can walk from my office in a few minutes to the National Association of Boards of Pharmacy, to the American Medical Association, to the American Dental Association, to the American Hospital Association, to the American College of Surgeons, and to the publication office of "Modern Hospital." I am, of course, acquainted by reason of my last ten years' work with some one in each one of these organizations.

There is no reason why my work should overlap that of any one else who is trying to advance professional pharmacy. This is frankly an experiment upon my part, and inasmuch as I am firmly convinced that the retail druggist must understand the physician of the future by first undertaking the policies developed and the principles which underlie the work of the teaching hospital, I have started at this point and I am going to build my program upon this foundation.

EDWARD SPEASE
October 9, 1940 Director Professional Relations, N.A.R.D.

NEW IN THE FAMILY

Diana Lee Wilkoc,—born June 28, 1940, daughter of Prof. and Mrs. August E. Wilkoc, Brooklyn College of Pharmacy.

Ellen Marie Templeton,—born June 2, 1940, daughter of Prof. and Mrs. Lawrence Templeton, University of Illinois.

Judith Ann Burger,—born September 17, 1940, daughter of Prof. and Mrs. Andrew Burger, University of Illinois.

Beverly Joan Aaron,—born June 12, 1940, daughter of Prof. and Mrs. Bernard Aaron, Rutgers University.

Janet Ann Wilson,—born May 15, 1940, daughter of Prof. and Mrs. Frank Wilson, Rutgers University.

Patricia Gay Archambault,—born September 3, 1940, daughter of Prof. and Mrs. George F. Archambault, Massachusetts College of Pharmacy.

Georgia Ann Bradley,—born May 24, 1940, daughter of Prof. and Mrs. Willis T. Bradley, Massachusetts College of Pharmacy.

Pharmaceutical Education on the March

Massachusetts College of Pharmacy.

Graduate Courses.—The degree Pharmaceutical Chemist which has traditionally been granted for one year of graduate study has been discontinued, and a new graduate curriculum has been established leading to the degree of Master of Science in Pharmacy. The curriculum is under the administration of the Graduate Council and twenty graduate students have registered. The curriculum is financed by the income from the Mary White Sullivan and Harriet White Bradbury Fund of one million dollars.

New Undergraduate Course.—A required course in public health, distinct from the courses in bacteriology and immunology, has been established. The course is in charge of Dr. Carey N. Peters, formerly instructor in physical diagnosis in the Harvard Medical School.

Scholarships.—Four new scholarships having a total value of $1,400 have been established. The funds were provided by the Boston Druggists' Association. The Traveling Mens' Auxiliary of the Massachusetts State Pharmaceutical Association, the Mu Chi Phi Sorority, and the Phi Delta Chi Fraternity. In addition to this sum there is a total of $8,100 available yearly for fellowships.

University of Illinois, College of Pharmacy.

Equipment.—Twenty-six modern prescription units, each accommodating four students, have been installed in the dispensing laboratory. These units are of the latest design and of the finest grade of oak. Each is equipped with a set of reagent and stock bottles, prescription balance, built-in ointment slab and the usual equipment required for prescription compounding. It is lighted with a four-foot fluorescent lamp. Each unit accommodates two students. The total capacity is fifty-two students. The general laboratory equipment consists of prescription files, blanks, McCourt label cabinets, refrigerator and wrapping counter. A stock room is adjacent. The dispensing equipment is owned jointly by the University of Illinois and the Illinois Board of Pharmacy. This will enable the Board of Pharmacy to conduct more satisfactorily its practical examinations. New laboratories for operative pharmacy have been equipped. The pharmacological laboratory will be occupied jointly with the Colleges of Medicine and Dentistry, thus conserving space and equipment. New laboratories and service rooms for the chemistry department are located on the fourth floor of the new building and those for bacteriology and botany are located on the second floor.

Continuation Courses.—Courses now contemplated by the University of Illinois will afford an apportunity for the pharmacists of the state to become acquainted with the new equipment and to receive instruction in the newer developments which have come into existence during the last few years.

Ohio State University, College of Pharmacy.

Equipment.—Three new laboratories have been equipped, one for manufacturing and two for research. A Lloyd Extractor has been

added for plant extraction and research. Three and two-thirds acres have been set aside for a drug plant garden which is now being developed.

Curriculum.—Courses in biological and gland products have been added and the amount of time allowed for prescription compounding increased. Courses have been organized in pharmaceutical sciences leading to the degree of Master of Science in Pharmacy.

Creighton University, College of Pharmacy.

Library.—The pharmacy library has recently received fifty new volumes,—mostly reference books on pharmacy, chemistry, biology, botany, pharmacology, and pharmaceutical history.

George Washington University, School of Pharmacy.

Building and Equipment.—The School of Pharmacy has acquired an additional building which will house two new laboratories, one of them being the Henry E. Kalusowski Memorial Laboratory. The building has been remodeled so as to provide for a modern animal room, and three offices with individual laboratory facilities for faculty members.

Library.—To further the research program the Women's Auxiliary of the District of Columbia Pharmaceutical Association has arranged to make an annual contribution to the library fund which will enable the school to acquire certain special types of literature.

Fellowships.—The Certified Products Company has established a research-teaching associateship for research in pharmacology.

Long Island University, Brooklyn College of Pharmacy.

Library and Equipment.—The library has been remodeled and the books are being re-catalogued in accordance with the system used in the Library of Congress. An international centrifuge has been added to the chemical equipment.

North Dakota Agricultural College, School of Pharmacy.

Curriculum.—In keeping abreast of modern advancements, the School of Pharmacy of the North Dakota Agricultural College has enlarged its curriculum by adding a number of new courses in order to more adequately serve the needs of the students and a department of pharmaceutical chemistry has been introduced, and a number of new courses have been added to the course of study.

Washington State College, School of Pharmacy.

Scholarship and Library.—The Women's Auxiliary of the State Pharmaceutical Association has given the School of Pharmacy $75.00 for a student scholarship and $50.00 for the purchase of new books for the library.

Temple University, School of Pharmacy.

Research.—Dr. Fritz O. Laquer, a distinguished authority in biology and biochemistry, has been added to the faculty of the School of Pharmacy for the express purpose of developing graduate work. Dr. Laquer was graduated in medicine from the University of Heidelberg in 1918. In 1922 he received a high award for physiology at the University of

Frankfurt. From 1924 to 1926 he was manager of a pharmaceutical manufacturing plant in Holland, returning to Germany in 1927 as director of the Farbenindustrie, leading physiological laboratory. Meanwhile he continued his studies at the University of Frankfurt and was appointed professor in 1930. In 1935 he went to Basle, Switzerland, serving for several years as consulting chemist for pharmaceutical firms before he was called to South America by the Venzuelan government as a consultant on its proposed laboratory of hygiene.

University of Nebraska, College of Pharmacy.

The Junior Division.—A Junior Division has been established in which all students seeking to enter the University as freshmen must register. Those who are fully qualified to enter the college of their choice also register in that college and follow the course work outlined. Those who have any deficiencies will first remove them in order to qualify for admission to the college. Facilities are provided in the Junior Division for personal counseling, which is intended to help the student select his course in line with his needs and aptitudes. The system requires that the College of Pharmacy set up not only requirements for entering the freshman class, but for entering the sophomore class as well.

Curriculum.—The name of the Department of Pharmacy has been changed to the Department of Pharmacy and Pharmaceutical Chemistry, and adjustments of courses have been made to better carry out the plan of instruction, one of the important changes being the increasing of the course in compounding from a one semester to a two semester course doubling the amount of time. All candidates for the degree of Bachelor of Science in Pharmacy must submit an acceptable thesis equivalent to not less than six nor more than ten credits in one of the following fields,—pharmacy, pharmaceutical chemistry, pharmacognosy, physiology, and pharmacology.

MARRIAGES

Dr. Carl Swisher, instructor in pharmaceutical chemistry, Western Reserve University and Miss Lilian Kuhar were married on July 29, 1940. They reside at 1123 Addison Road, Cleveland, Ohio.

Mr. Mitchell J. Stoklosa, assistant in pharmacy, Massachusetts College of Pharmacy and Miss Evelyn M. Helmsdorf, chief pharmacist at the Faulkner Hospital, Boston, were married on September 2, 1940.

Miss Mary Schmidt, instructor in botany at Ferris Institute, was recently married to Mr. George Tapley.

Mr. Paul R. Rasanen of Aberdeen, Washington, now graduate assistant in pharmaceutical chemistry at the University of Nebraska, and Miss Ila G. Speers of Hoquian, Washington, were married August 16, 1940.

Notes and News

A large collection of whole and powdered spices and a large number of natural and synthetic aromatics have been added to the already extensive collection at the University of Oklahoma.

Dr. Karl L. Kaufman, who completed his graduate work at Purdue in 1936, has been elected assistant professor of pharmacognosy at the Medical College of Virginia to succeed Dr. J. A. Reese who has accepted the deanship of the School of Pharmacy at the University of Kansas. Dr. Kaufman is a member of Sigma Xi. J. M. Early, who completed his master's work in chemistry at North Carolina and later graduated from the Medical College of Virginia, has been appointed associate in pharmacy for the year, carrying the work formerly done by Professor Rowe who has a leave of absence for the present session. Mr. Early is also a Sigma Xi. The new $2,000,000 hospital is nearing completion and will be occupied probably in December.

Mr. Frank V. Protepka, B. S., 1937, Connecticut College of Pharmacy, more recently a graduate of Western Reserve University, has been added to the staff of Creighton University, College of Pharmacy, taking the place of Mr. Alfred C. Anderson who has been transferred to the Creighton School of Medicine. Mr. Protepka is a member of Rho Chi.

Dale L. Kingsley, M. S., 1940, University of Florida, has accepted a position in the School of Pharmacy of North Dakota Agricultural College. Dr. C. H. Becker, Ph. D., 1940, is now on the staff of Duquesne University, School of Pharmacy. Thomas J. Macek, M. S., 1940, is control chemist with Burroughs-Wellcome & Company, Tuckahoe, New York. Bernard Jatul and George M. Hocking are newly appointed graduate assistants. Ten graduate students are pursuing advanced work in the pharmaceutical sciences. Word that we may proceed with a WPA study sponsored by the School of Pharmacy, a WPA project involving a search of the literature for all work done on plants which grow in Florida is in progress. All information will be classified and filed for the use of the School of Pharmacy. This work is expected to be of great value in answering queries of residents of the state and will also be useful to research students.

Dr. H. B. Lewis, Director of the College of Pharmacy at the University of Michigan, is on leave for the present semester. Professor C. C. Glover has assumed Dr. Lewis's administrative duties. Last year Howard E. Parker received the Lehn and Fink medal and was elected to Phi Kappa Phi. Arthur Rosen was awarded the Rho Chi Freshman prize. Recent Rho Chi initiates are William L. Austin, Marjorie A. Kern, James R. Dehlin, Esperanza Castro and Chieko Otsuki.

Professor Russell E. Brill, formerly of Drake, has been appointed assistant professor of botany and pharmacognosy at Rutgers succeeding Professor Otto P. M. Canis who retired last June. Leroy Keagle, Frank DiGangi, and Anthony Ridolfo, all 1940 graduates of Rutgers, have been awarded fellowships at the University of Maryland, Western Reserve, and Ohio State, respectively.

Dr. L. David Hiner, formerly of the Division of Pharmacy of the

South Dakota State College, is now a member of the staff of the College of Pharmacy of Ohio State. Joseph A. Zapotocky, B. Sc., 1940, Ohio State, and Arthur E. Schwarting, B. S., South Dakota State College are newly appointed graduate assistants. Professor C. L. Williams spent the summer in graduate work at Purdue.

Following the resignation of Dean Edward Spease, Prof. Edward D. Davey has been made acting dean of the School of Pharmacy of Western Reserve University. Plans have been announced for a closer relationship of the Schools of Medicine, Pharmacy, and Dentistry. Dr. Torald Sollmann becomes professor of pharmacology. Under the new plan Dr. Herman P. Lankelma becomes professor of chemistry, Dr. Walter E. Hambourger becomes assistant professor of pharmacology, Dr. Joseph Seifter is made senior instructor in pharmacology, and Mrs. Nellie Perry Watts becomes instructor in pharmacology. The same appointments also apply in the School of Dentistry. Recent appointments of graduates of the School of Pharmacy include that of John F. Miller, pharmacist at the Howard Field Dispensary, Panama Canal Zone; Oliver W. Busch, B. Sc., demonstrator in pharmacy and assistant pharmacist at University Hospitals, and to the position of pharmacist in Huron Road Hospital; Miss Isabel Kippen, M. S., pharmacist at Lakewood City Hospital; Henry Szymczyk, B. Sc., as pharmacist at Hawthornden State Hospital, Independence, Ohio; Mrs. Nancy Wright Wheeler, B. Sc., as assistant pharmacist at St. Luke's Hospital; Leo F. Godley, M. Sc., and Miss Ann Pichioni, M. S., have been appointed to internships in the University Hospitals and Myon W. McKinney in Huron Road Hospital and Helen M. Blank in St. Luke's Hospital. A tuition scholarship has been awarded to Jesse M. Pike, University of North Carolina. Graduate assistantships in pharmacy were awarded to John W. Argabrite, University of South Dakota; John W. Boenigk, Duquesne University; and Frank E. DiGangi, Rutgers University.

Prof. Ernest L. Beals of the Oregon State College, School of Pharmacy was granted the doctorate degree at Purdue in June. The Department of Physical Chemistry has moved into the new chemistry building. This makes available a large laboratory in the pharmacy building for the course in pharmaceutical analysis. Robert L. Johnson, George H. Swartsley, and Virginia H. Pickins are new pledges to Rho Chi. Dale D. Doherty was awarded the Kappa Psi Grand Council key for the highest scholastic record in the local chapter for 1940.

Dean H. C. Newton of the Massachusetts College of Pharmacy gave an address on "Your College" before the 1940 State Pharmaceutical Association convention. Professor L. M. Ohmart and Mr. M. Stohkosa exhibited the College's model prescription unit at the Maine Convention. At the New Hampshire Convention, Professors Newton, Bauer and Goodness gave a symposium on "Keeping Up-to-date, A Problem of the Profession" and before the Vermont Convention they spoke on "The Preparation of the Pharmacy Graduate of Today." Francis Lambert, A. M., Boston University, has been added to the English department. Prof. L. M. Ohmart spoke before the New England Dental Society on "Pharmaceutical Service to the Dentist and His Patient".

Prof. H. W. Youngken and Prof. E. N. Gathercoal of the University of Illinois spent the early part of the summer in making a survey of the

medicinal plants in the northern and central counties of the lower penninsula of Michigan. Later in the summer Dr. Youngken collected herbarium specimens for investigation in Alabama, Georgia, Tennessee and North Carolina. He also visited drug farms in New Hampshire where several acres of digitalis is under cultivation.

Rex Clayton, instructor in pharmacy at the University of Idaho College of Pharmacy and second lieutenant in the Medical Administrative reserve corps of the army has been called for one year of active duty. He will be stationed at the Letterman General Hospital, San Francisco. Herman C. Forslund, M. S., Washington State College has been appointed instructor in pharmacy for the year 1940-41.

At Alabama Polytechnic Institute J. E. Cox was awarded the Rho Chi medal by Zeta chapter for the highest general average during his freshman year. T. L. Donahue and J. M. Rash are new members of the chapter.

At the University of Michigan the Pharmacy Student Scholarship Aid Fund consists of tuition grants awarded preferably to new undergraduate students by a faculty committee and is available through the generosity of an alumnus of this College. The beneficiaries of the fund this year are James P. Shields, Edward Spasek, and Alice Louise Dehlin. John B. Data is the Frederick Stearns and Company Fellow. Edward L. Jenner is the Parke, Davis and Company Fellow. Joseph H. Burcnalter holds the Parke, Davis and Company Research Grant. Mitchell F. Zienty is The Upjohn Company Fellow. Harold Kaplan is the Lilly Endowment Fellow. William B. Wright, Jr., is the Monsanto Chemical Works Research Fellow. Raymond J. Warzynski received the Monsanto-Pfizer Research Grant. The Barbour Scholarships are awarded to oriental girl students, this year the holders are Esperanza Castro and Chieko Otsuki.

Adrian Paradis, who has served as treasurer of the Brooklyn College of Pharmacy and the Kings County Pharmaceutical Society for over thirty years, died recently.

Charles W. Bliven, M. S., University of Nebraska, formerly of the laboratories of George A. Breon and Company, Kansas City, is now assistant professor of pharmaceutical chemistry at George Washington University. Frank Fortunate, M. S., Duquesne University has been appointed research associate in pharmacology.

H. M. Loy, a graduate student in botany at the University of Chicago, has been added to the staff of Ferris Institute and Henry Kilkems of Hope College is giving the course in scientific German.

J. E. Christian, recently of the Upjohn Company, is a Lilly Fellow at Purdue. Stanley Mittelstaedt, who has been a graduate assistant in materia medica, is now an instructor in the Boise Junior College at Boise, Idaho. J. E. Orr is an assistant in pharmacy at the University of Wisconsin. H. O. Thompson, M. S., 1940 is graduate assistant in pharmacy and materia medica. He will do advanced work toward the Ph. D. degree. The School of Pharmacy, through its extension department, conducted a five-day short course for drug clerks, July 8 to 12. The course was so well received that it will be continued. The staff is conducting an orientation course of six weeks for the entering students to acquaint them with the work of the school and its part in American pharmacy. Students from nine states were enrolled for graduate work in the summer of 1940

At the Connecticut College of Pharmacy Dr. Courtne C. Bishop has been appointed lecturer in first aid. Wallace F. White, instructor in biology, attended the summer session at the University of Wisconsin. Nicholas W. Fenney, Walter R. Williams and Miss Josephine Izzo were enrolled for special work at the Albertus Magnus College, and Miss Florence Burke was at the State Teachers College. Dr. Howard B. Lewis, Director of the School of Pharmacy of the University of Michigan, visited the College recently. Dr. Lewis, who received his graduate training at Yale, took much of his work in the building now occupied by the College of Pharmacy.

Dr. R. L. McMurray, who has been at Ohio State for five years, has returned to the Washington State College. Dr. Allen I. White of the University of Minnesota replaces Dr. Minnie M. Meyer who has gone to the Southern College of Pharmacy at Atlanta. Leo Sciuchette of the University of Idaho is a new teaching fellow in pharmacy. The annual pharmacy get-together which is sponsored by the student branch of the American Pharmaceutical Association, Rho Chi and Lambda Kappa Sigma was held October 11. Prizes and scholarships are awarded each year on this occasion and the pledges of the honorary sororities are announced.

Additions to the instructional staff at the Philadelphia College of Pharmacy and Science are Prof. Herman Wittmeyer in English, Prof. Ernest H. Plesset in Physics, and Dr. Bernard Witlin in bacteriology. Prof. Wittmeyer was formerly at the University of North Carolina, Dr. Plesset was at Howard and Dr. Witlin was from the University of California.

Dale L. Kingley, who has been attending the University of Florida, has been added to the staff of the North Dakota Agricultural College, School of Pharmacy. Kenneth Redman, formerly a member of the staff, is now doing graduate work at the University of Wisconsin. Kathryn Odney and Erling Arnstad have been elected to Rho Chi.

W. Thomas Spain, a graduate of the School of Pharmacy of the Medical College of Virginia, is pursuing graduate work in pharmaceutical chemistry at the University of Minnesota.

Among the recent gifts to the University of Wisconsin is a renewed $500 fellowship to pharmacy, made by Fritsche Brothers. Parke, Davis and Company gave $2,000 to establish a fellowship on Malaria and the Abbott Laboratories gave $2,100 for a continuation of a study of chemical compounds that effect cancer growth.

Dr. H. G. O. Holck of the College of Pharmacy of the University of Nebraska has received a copy of "Notes on Denmark Before and After Danish Invasion," published by the American Friends of Danish Freedom and Democracy, of which he is a sponsor. Dr. Holck has sent in his suggestions as to improvement of the book before the second edition is published. Other Nebraska sponsors of the organization include Chancellor Schwartz of Nebraska Wesleyan University and Ruth Bryan Rohde.

Dr. Orlando Cattani, chief of the Social Security Board of Chile and vice-president of the Central Association of Chemists and Pharmacists,

was a recent visitor to the University of Nebraska where he inspected educational facilities and methods used in the College of Pharmacy. Dr. Cattani is on a four months tour of the United States for the Chilean Government to study the pharmaceutical educational set up and the practices of manufacturing and retail pharmacy as well as the various means of distribution used by the pharmaceutical industry.

Dean and Mrs. E. R. Serles were honored by the Chicago Branch of the American Pharmaceutical Association at a banquet held at the Palmer House, Chicago on October 15. Approximately one hundred and fifty were in attendance among whom were Dr. Arthur C. Willard, President of the University of Illinois; Dr. R. A. Allen, Executive Dean of the Chicago Colleges; Dean and Mrs. David J. Davis of the College of Medicine, Dean and Mrs. Harold M. Marjerison of the College of Dentistry, various department heads of the three colleges of the University that are located in Chicago, and representatives of many pharmaceutical organizations. All wished the guests of honor success and happiness in their new surroundings. Both Dean and Mrs. Serles responded to the well wishers and assured them that they will become just as genuine Illinoisans as they have been South Dokatans in the past.

Several meetings of the Pharmaceutical Syllabus Revision Committee were held in Richmond in May. The comments received from the various interested persons concerning the list of required subjects and their definitions were considered. Some time was spent on the allotment of minimum hours devoted to each subject and the Chairman was instructed to appoint a special committee to study this matter and make recommendations at an early date. It was voted to include outlines for all required courses and it is hoped that all such outlines will be in the hands of the Committee shortly. Chairman Henry M. Burlage announces that the tentative date of publication of the next revision was set at January 1, 1942.

Late in June President George F. Zook of the American Council on Education announced that the President of the United States had authorized the appointment of a committee representing governmental agencies to cooperate with a similar committee appointed by the Council. The establishment of machinery for coordinating the efforts of government and education represents a considerable achievement. Dr. Zook requested suggestions and comments regarding the important issues which face the schools and colleges which the Council's committee should consider. Since their problems were closely related to the work of the joint Committee on Status of Pharmacists in Government Service and because of his nearness to Washington, President Kendig was by common consent asked to represent the American Association of Colleges of Pharmacy in the Conferences called by the American Council on Education. This policy lessens the danger of conference duplication of effort. Under Dean Kendig's direction the interests of pharmaceutical education and the American Association of Colleges of Pharmacy will be well cared for.

Miscellaneous Items of Interest

Greetings to the National Association of Retail Druggists, 1940 Meeting

I have been requested by President Kendig to bring you the greetings of the American Association of Colleges of Pharmacy. Although the immediate objectives of our organizations are different, I think we are agreed on an ultimate objective,—the betterment of American Pharmacy.

In view of the fact that the occupation of pharmacy presents educational, professional and business angles, it would be difficult to cover all these interests in one organization, even though unification might be desirable in the accomplishment of some purposes. The present system of organization, with educational matters the chief concern of the American Association of Colleges of Pharmacy, professional aspects the particular realm of the American Pharmaceutical Association and the business phases within the province of the National Association of Retail Druggists, insures that each of these interests will receive the attention it merits with no one overshadowing the others. At the same time, this arrangement does not preclude a unanimity of action and thought in questions affecting pharmacy and pharmacists.

The American Association of Colleges of Pharmacy is vitally interested in the activities of the National Association of Retail Druggists for it represents retail pharmacy, a field which over 80 per cent of our graduates enter. Although we are the producers and you the consumers our relationships are closer than these terms indicate. There is a mutual interdependence in that you require pharmacy graduates to operate your stores and we must look to retail pharmacy for placement of our graduates.

It is our job to furnish men and women who will not only be capable but also acceptable as pharmacists. It is your job to so direct the trends of retail pharmacy that these graduates will find satisfaction and opportunity in this field.

May each of us continue to work along our separate lines toward the common end—the betterment of American Pharmacy.

Charles W. Ballard.

National Association of Boards of Pharmacy Census of Pharmacy for 1939-1940

8,762 students were enrolled in sixty-eight colleges of pharmacy during the school year 1939-1940, as compared with a total of 8,569 for the year previous, according to the annual student census just com-

pleted by the National Association of Boards of Pharmacy. Questionnaires were mailed in June but the final results have just been tabulated.

This is the second consecutive year that there has been an increase in the total enrollment. The 1938 figure was 8,190 students, showing a gain of almost 600 in two years. The steady increase in college enrollment year by year, although small, is encouraging to those who have worried about the possibility of a shortage of pharmacists in the future. It shows that the four-year course of pharmacy is gaining recognition from prospective students.

The number of seniors graduating, however, was only 1,533 as compared with 1,842 the previous year. Most of this year's graduating class matriculated in 1936, and as the freshman enrollment for that year was less than that of 1935, a decrease in the number of graduates was expected. By the same token, we may expect a larger class to graduate next year, as the 1937 freshman class showed about a hundred more students than the 1936 class.

The new students matriculating in 1940 totaled 3,227 but as 128 of these were transfers from other pharmacy colleges, the net gain was 3,099. The 1939 new student count was 2,920.

On the basis of a freshman count (for 64 colleges) of 2,363 in 1936 and a graduation class of 1,533 this year (from 68 colleges) we find that the drop-out percentages was approximately 46 per cent.

Board Statistics

The registration statistics collected from the boards are equally as interesting. Returns from 45 states show that 2,271 pharmacists were registered by examination during 1939. (In a few instances, the period covered is the fiscal year of the board instead of the calendar year.) On this basis, the total registrations for the United States should be approximately 2,500 and this means that the estimated 2½ per cent replacement figure has been met.

The total number taking the registered pharmacist examination in these 45 states was 3,648—so the passing percentage on board examinations for the country as a whole was about 62 per cent which is low. However, it should be remembered that the period covered was one during which some five or six states were still examining large classes of non-graduates, and the passing percentage in these states of from 20 to 40 per cent coupled with the fact that the numbers of candidates were large, has done considerable to drag down the average for the country as a whole. In the majority of the states on a college basis, the passing percentage ran from 70 to 100 per cent. That the number of non-graduates still sitting in examination was considerable is evidenced also by the fact that the total number taking examination was 3,648 whereas the graduating class of the period (1939) was 1842. Naturally some allowance must also be made for graduates who failed in previous years and were retaking the board examination.

The examination statistics also show that 355 new names were added to the roster of assistant pharmacists in eleven states. A count of the total number of assistant licenses still outstanding shows this number to be 4,512 in 29 states. These licenses are still being renewed, in some instances, although the state no longer offers the assistant ex-

amination. The following states show an appreciable number of assistant certificates: Illinois, 981; Colorado 497; Pennsylvania 476; Connecticut 426; Massachusetts 414; and Wisconsin 353.

The total number of registered pharmacists on the active roster in 45 states and Alaska is 112,055. This figure includes duplications, however, as some pharmacists pay renewal fees in two or more states. For example, the reciprocal registrant usually keeps his original examination license in good standing so as to be able to use it in the future for further reciprocity.

H. C. Christensen, Secretary
September 20, 1940 National Association Boards of Pharmacy.

Report of the Fairchild Scholarship Examination

The Fairchild Scholarship Committee for 1940 was composed of A. G. DuMez, C. H. Rogers, P. H. Costello, and E. G. Eberle, Chairman. The Columbia University College of Pharmacy staff prepared the questions and graded the papers. Twenty-eight candidates competed. The subjects presented were: pharmacy, materia medica and chemistry.

The highest percentages were: pharmacy, 77.20; materia medica, 90.33; chemistry, 74.00. Lowest percentages in the same subjects were: pharmacy, 39.00; materia medica, 45.00; and chemistry, 10.00. The highest general average was in materia medica; next in pharmacy; and third in chemistry.

Ten candidates averaged 70 or more in pharmacy; two, 70 or more in chemistry; and twelve 70 or more in materia medica; four of the candidates averaged 70 or more in all branches.

Each year the suggestion is made that a change of method might improve the examination. The time to take this under advisement is when the report is presented at the annual convention. The Chairman will be glad to hear any proposal. There has, however, been no serious complaint and certainly each candidate has the same opportunity. This year there were several criticisms as to the time of giving the examination.

Scheduled report of ten candidates follows:

Name	Materia Medica	Chemistry	Pharmacy	Average
1.	85.76	74.00	71.00	76.92
2.	89.00	65.00	71.60	75.20
3.	90.33	55.00	76.40	73.91
4.	76.00	72.00	66.60	71.53
5.	73.33	57.00	77.20	69.18
6.	75.00	53.00	75.60	67.87
7.	72.00	48.00	75.20	65.06
8.	72.33	51.00	69.40	64.24
9.	86.66	39.00	62.60	62.75
10.	79.33	38.00	68.20	61.84

The winning candidate was Miss Etta Macdonald of the School of Pharmacy of the University of Texas.

Pharmacy College Graduates during 1939-1940*

Due to the early date of this year's convention, it was not possible to include data on pharmacy college graduates in the Report of the Executive Committee which was presented at Richmond last May.

These data are now available and are being submitted to our members as a supplement to the Executive Committee Report, which appeared in the July number of the American Journal of Pharmaceutical Education.

During the academic year 1939-1940, 1,366 graduates were awarded the Bachelor of Science in Pharmacy degree in our Association colleges. The number during 1938-1939 was 1,427.

While this decrease of 61 degrees represents a change of approximately only one graduate less per Association college, it is of some significance when we consider that the 1938-1939 graduates could hardly be thought of as meeting the minimum demands of the profession. It still behooves retail pharmacists, manufacturers, and all others interested in the welfare of the profession of pharmacy, to assist in interesting an adequate number of desirable young men and women in entering our profession.

The Executive Committee realizes that an over-supply of practitioners in any profession eventually results in the weakening of that profession. We also believe that a sustained under-production may cause equally unfavorable consequences.

May we all do our share to insure the profession of pharmacy of an adequate supply of capable, reliable, well-trained practitioners.

Ten Pharmacy Graduate degrees were awarded by the University of Buffalo, Fordham University, and the Long Island University College of Pharmacy. These degrees represent the last of the three-year graduates from these colleges.

Six Pharmaceutical Chemist degrees were awarded by the Massachusetts College of Pharmacy for the completion of a five-year pharmacy curriculum.

The advanced degrees awarded during this same period of time are as follows: Master of Science, 30; Doctor of Philosophy, 12; and Doctor of Science, 1.

This total of 43 graduate degrees compares with a total of 45 such degrees reported last year and 31 during the academic year 1937-1938. This year's data represent a decrease of 6 Master of Science degrees, an increase of 3 Doctor of Philosophy degrees, and one additional Doctor of Science degree, as compared with last year's record.

The continued increase in graduate work among our member colleges during recent years is most encouraging and fills a need which has been felt by pharmaceutical manufacturing concerns and colleges of pharmacy for some time. As we continue to furnish pharmaceutical industry with an ever-increasing number of adequately trained scientific experts, we shall awaken an interest in pharmaceutical education which

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*A supplemental report by the Chairman of the Executive Committee necessitated by the fact that the annual meeting of the American Association of Colleges of Pharmacy was held in May instead of August.

should result in more adequate financial support and hence an ever-strengthening program.

The Executive Committee considers it extravagant to make the observation that unusually high standards of graduate work must be maintained, if this program is to prove the asset which it should to our whole profession of pharmacy. The tardy development of graduate programs by our Association colleges would prove unfortunate. The premature development of inferior graduate work would be little short of disastrous. Let us go forward with a steady development of a sound graduate program in our colleges of pharmacy.

Twenty-nine colleges reported graduate students in their enrollment. Those reporting ten or more graduate students are as follows: Western Reserve University, 10; University of Michigan, 11; University of Wisconsin, 13; Louisville College of Pharmacy, 15; University of Minnesota, 19; Purdue University, 20; Massachusetts College of Pharmacy, 20; University of Washington, 22; University of Maryland, 27.

The University of Maryland retains the lead in the number of graduate students enrolled. It is followed by other university colleges having well established and favorable reputations for graduate work.

The Executive Committee reports, with considerable satisfaction, that only seven honorary degrees were awarded by our Association colleges during the past year. This is the same number as was awarded during 1938-1939, but only half as many as were conferred during the college year 1937-1938.

It is evident that rather extreme conservatism is manifested in the honorary degree awards of our Association colleges. The continuance of this policy will do much to maintain the high standards of our colleges and the integrity of their degrees.

Executive Committee,
Ernest Little, Chairman.

Official New Jersey Stresses the Importance of Pharmaceutical Licensure

On October 8, 1940, Governor A. Harry Moore of New Jersey awarded certificates of registration to seventy-nine newly registered pharmacists at the State House in Trenton. In addition to an inspiring address delivered by the Governor, President John McLaughlin of the New Jersey Pharmaceutical Association pointed out the necessity of strong state and local organizations if the retail pharmacists are to be placed in a position to combat present day trade and professional problems. He urged the new registrants to continue their studies and to maintain close contact with members of the medical profession and with their colleagues. The three chapters of The Code of Ethics of the American Pharmaceutical Association were read by various members of the Board of Pharmacy and all of the new candidates signed copies of the Code for filing in the Board's records. The effort that the Board of Pharmacy in New Jersey makes to impress upon new registrants the services and re-

sponsibility of pharmacists is most commendable. This same procedure is bound to impress the public and make the pharmaceutical profession, itself, conscious of its own obligations as a public servant.

Rufus A. Lyman.

Higher Education and National Defense*

EXCERPTS FROM SELECTIVE TRAINING AND SERVICE ACT OF 1940 AND SELECTIVE SERVICE REGULATIONS OF IMMEDIATE CONCERN TO EDUCATION

I

The Selective Service Act of 1940 contains the following provisions regarding deferment of a "necessary man":

Sec. 5 (e). The President is authorized, under such rules and regulations as he may prescribe, to provide for the deferment from training and service under this Act in the land and naval forces of the United States of those men whose employment in industry, agriculture, or other occupations or employment, or whose activity in other endeavors, is found . . . to be necessary to the maintenance of the national health, safety, or interest.

This provision is given more specific definition in the published "Selective Service Regulations" which are the guide to policy for the local draft boards:

Volume One. 101. The purpose of selective service.—The purpose of Selective Service is to secure an orderly, just, and democratic method whereby the miltary manpower of the United States may be made available for training and service in the land and naval forces of the United States, as provided by the Congress, with the least possible disruption of the social and economic life of the Nation.

On the local board is placed the responsibility of deciding which men should be deferred because of their civilian activities. It is in the national interest and of paramount importance to our national defense that civilian activities which are contributing to the national health, safety, and interest should be disrupted as little as possible, consistent with the fundamental purpose of the Selective Training and Service Act.

b. Section 5 (e) of the Selective Training and Service Act provides: "No deferment from training and service shall be made in the case of any individual except upon the basis of the status of such individual, and no deferment shall be made of individuals by occupational groups or groups of individuals in any plant or institution."

351. "Necessary man" defined.—A registrant shall be considered a "necessary man" in industry, business, employment, agricultural pursuit, governmental service, or in any other service or endeavor, including training or peparation therefor, *only when all of these conditions exist:*

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*Issued by American Council on Education, October 15, 1940.

Volume Three. 350. General rules for classification of Class II-A.—a.

a. He is, or but for a seasonal or temporary interruption would be, engaged in such activity.
b. He cannot be replaced satisfactorily because of a shortage of persons with his qualifications or skill in such activity.
c. His removal would cause a material loss of effectiveness in such activity.

352. Composition of Class II-A.—a. In Class II-A shall be placed any registrant found to be a "necessary man" in any industry, business, employment, agricultural pursuit, governmental service, or any other service or endeavor, or in training or preparation therefor, the maintenance of which is necessary to the national health, safety, or interest in the sense that it is useful or productive and contributes to the employment or well-being of the community or the Nation.

b. In determining whether a registrant is a "necessary man," the local board shall give due consideration to those registrants engaged in any activity which is essential to the national health, safety, or interest in the sense that a serious interruption or delay in such activity is likely to impede the national defense program.

353. Length of deferments for Class II-A.—Class II-A deferments shall not be for a period longer than six months. However, such deferments shall be renewed for further periods of not to exceed six months, unless the local board shall determine that the registrant should be reclassified . . .

II

The Act contains the following provisions regarding students enrolled in colleges and universities:

Sec. 5 (f). Any person who, during the year 1940, entered upon attendance for the academic year 1940-1941—

(1) at any college or university which grants a degree in arts or science, to pursue a course of instruction satisfactory completion of which is prescribed by such college or university as a prerequisite to either of such degrees; or

(2) at any university described in paragraph (1), to pursue a course of instruction to the pursuit of which a degree in arts or science is prescribed by such university as a prerequisite;

and who, while pursuing such course of instruction at such college or university, is selected for training and service under this Act prior to the end of such academic year, or prior to July 1, 1941, whichever occurs first, shall, upon his request, be deferred from induction into the land or naval forces for such training and service until the end of such academic year, but in no event later than July 1, 1941.

The "Selective Service Regulations" give this interpretation:

Volume Three. 345. Class I-D—Student fit for general military service; available not later than July 1, 1941.—In Class I-D shall be placed every college or university student who meets all of the conditions specified in paragraph 347 and who after physical exami-

nation is found fit for *general* military service, according to the standards prescribed in Volume VI, "Physical Standards."

346. Class I-E—Student fit only for limited military service; available not later than July 1, 1941.—In Class I-E shall be placed every college or university student who meets all of the conditions specified in paragraph 347 and who after physical examination is found fit only for *limited* military service, according to the standards prescribed in Volume VI, "Physical Standards."

347. Conditions on student deferment.—No registrant shall be placed in Class I-D or Class I-E unless he *meets all of the following conditions:*

a. He shall request that he be deferred from induction;

b. He entered upon attendance in a college or university, as defined in paragraph 348 for the academic year 1940-1941, and before January 1, 1941;

c. He is in substantially full-time attendance at such college or university and is there a bonafide student pursuing a course of instruction which the college or university requires be satisfactorily completed as a prerequisite to conferring degrees in the arts or sciences (such as undergraduate or bachelor's degrees or master's, doctor's, professional, or other advanced degrees), or as a prerequisite to conferring certificates which are accepted as a credit toward such degrees by colleges or universities which confer such degrees. The taking of a correspondence course shall not be cause for deferment for any registrant.

348. Definition of college or university.—The term "college or university" shall include only an advanced educational institution which regularly grants to students who have satisfactorily passed prescribed courses of instruction, degrees in the arts or sciences (such as undergraduate or bachelor's degrees or master's, doctor's, professional, or other advanced degrees), and any junior college or other college which regularly grants to students certificates which are accepted by such advanced institutions as a credit toward such degrees.

349. Length of deferment for college or university students.—Registrants classified in Class I-D or Class I-E shall be deferred until the end of their academic year 1940-41, or until July 1, 1941, whichever occurs first. Men in Class I-E, unless reclassified, shall not be inducted until such time as they may be acceptable to, and called by, the land or naval forces for training or service.

New Books

HISTORY OF PHARMACY by Edward Kremers, Ph.G., Ph.M., Ph.D., Sc.D., Former Director, Course in Pharmacy and Professor of Pharmaceutical Chemistry, University of Wisconsin; author, editor and historian, and George Urdang, Ph.G., D.Sc. Nat., Honorary Member of the American Pharmaceutical Association; former Editor of the Pharmazeutische Zeitung; former Director of the Society for the

History of Pharmacy, Berlin; Author and Historian. 1940. 466 pages. 30 illustrations. J. B. Lippincott Company. Price $4.50.

The book is written in four parts. Part I deals with the early backgrounds of pharmacy in the old world. Part II deals with the rise of professional pharmacy in Europe. Part III deals with pharmacy in the United States. It covers the period of the North Atlantic Colonies up to and including the period of the young republic in one section. The second section of Part III deals with the organized developments in pharmacy covering the growth of associations, the rise of legislative regulations, the development of education, the establishment of a literature and a discussion of the economic structure. Part IV deals with the discoveries, inventions, and other contributions to society by pharmacists and includes a bibliography, a chronology, and a glossary. The plan and organization of the book has been developing in Dr. Kremers' mind for half a century. The actual composition and documentation is the work of Dr. Urdang. The Editor has commented on the significance of the appearance of this book on the Editor's Page in this issue but the objectives of the book can best be expressed in the senior author's own words which are taken from the preface; 'The history of pharmacy is replete with inspiration for the youthful disciple who is preparing to devote his life to the service of mankind. This alone ought to make its study worth while. Important as this aspect may be, it is perhaps equally important that the pharmaceutical practitioner know the past in order that he may understand the present and plan intelligently for the future. That this book may aid him to accomplish this, is the hope of its authors." The pharmaceutical profession owes a debt of gratitude for this book, not only to the authors, but to the House of Lippincott, whose financial assistance made it possible.

R. A. L.

PHARMACOLOGY AND THERAPEUTICS by Arthur R. Cushny, revised by C. W. Edmunds, A.B., M.D., Professor of Materia Medica and Therapeutics in the University of Michigan, Ann Arbor, and J. A. Gunn, M.A., M.D., D.Sc., F.R.C.P., Professor of Pharmacology and Director of Nuffield Institute for Medical Research, University of Oxford, England. Twelfth edition. 1940. 852 pages. 66 engravings. Lea & Febiger. Price $6.50.

It should be welcome news that a new edition of this favorite text book in the medical and pharmacy schools has just appeared. One of the aims of the new edition is to bring the material into conformity with the British Pharmacopœia of 1936 and the two supplements to the U. S. P. XI, as well as to present the important new work in the special field. To bring all major fields up to date it has been necessary to add about sixty pages to the book, including the slight enlargement of each page. The thoroughness of the revision is indicated by extensive additions to discussions of the older medicines as well as numerous entirely new subjects dealing with drugs that have come into use during the past few years. The following illustrations may serve to show this: Metrazol in mental diseases, evipal and pentothal anesthesia, nirvanol in chorea, mebaral in epilepsy, protamine insulin evaluation,

mandelic acid antisepsis, choline derivative discussion, picrotoxin as an antidote, benzedrine stimulation, sulfanilamide and its derivatives in infections, several new local anesthetics, sex-hormone therapy, treatment of Addison's disease and newer knowledge in the whole vitamin field. All is presented in the usual lucid and critical style of the authors. Although it is impossible to include everything in a text book, the reviewer wishes that mention had been made concerning the value of sodium chloride in the prevention of the effects of excessive heat and also a note about the observations by Luckhardt and collaborators concerning the relative ease of absorption of epinephrine and local anesthetics from certain oral areas, important in dental practice. Concerning cyclopropane anesthesia some investigators have recently cautioned against the use of morphine for premedication (Robbins, 1940), but this matter is still controversial in case of man. Also, it seems misleading to new students to carry over the word "recent" or some such term from older editions, as in phenobarbital addition, physostigmine in intestinal atony and possible poisoning by cinchophen. Some deletions have been made and in some cases improved illustrations or graphs have been substituted for older ones, and references to important work done since 1936 have been added to the bibliographies. Undoubtedly this new edition will retain the wide popularity of its predecessors.

H. G. O. H.

AN INTRODUCTION TO MATERIA MEDICA AND PHARMACOLOGY by Hugh Alister McGuigan, Ph.D., M.D., Professor of Materia Medica, Pharmacology and Therapeutics, University of Illinois, College of Medicine, Chicago, and R. A. McGuigan, M.D., C.M., with Miss Elsie E. Krug, St. Mary's Hospital, Rochester, Minn., 1940. 871 pages. 61 illustrations. C. V. Mosby Company. Price $3.50.

In writing the second edition of this book the senior author has added two junior authors, one an experienced teacher of nurses. The contents cover pharmacology in its widest sense so that due consideration is given to pharmacy, especially to preparing medicines for hospital use, physiological anatomy, physiology, pharmacognosy (with a series of beautiful color plates of medicinal plants) and the use of animal experimentation as a basis of knowledge in this field; numerous up to date references and a glossary are appended. It is really remarkable that a book containing so much valuable material, written in an easily understandable style, can be produced at such a low cost. On page 347 the words *per kilogram* should probably be added after 5 mg.; in case of postulate 2, on page 768 it seems clearer to say: isolated from the blood coming from the gland in question, rather than from "the efferent blood." Although the book is written for nurses, it is well worth any pharmacist's time to peruse it.

H. G. O. H.

CLINICAL TOXICOLOGY by Clinton H. Thienes, M.D., Ph.D., Professor of Pharmacology, School of Medicine, University of Southern California; Attending Pathologist (Toxicology) Los Angeles County Hospital. 1940. 309 pages. 7 illustrations and plates. Lea and Febiger. Price $3.50.

This is intended as a class room text and for use by the general practitioner. The poisons are grouped according to their major toxic actions such as cerebral, medullary and cord convulsants; the action of anesthetics, analgesics and miscellaneous depressants; the degenerative poisons and those affecting the blood and hemtopoietic organs. The diagnosis and treatment is based upon the symptomatology and physiology rather than upon the chemistry or pharmacy of the compounds except where this is needed in order to more clearly direct the procedure. This is as it should be because the emergency treatment of poisoning, whether by physician or pharmacist, is usually symptomatic rather than chemical. Each poison is considered in a routine way covering the subjects of the toxic dose, the source and chemistry, absorption, etiology of poisoning, symptoms and actions, pathology, duration, fate and excretion, diagnosis, cause of death and the treatment. An excellent class room text and drug store reference book.

R. A. L.

FUNDAMENTALS OF BACTERIOLOGY by Martin Frobisher, Jr., S.B., Sc.D., F.A.A.S., F.A.P.H.A., Associate in Bacteriology, The Johns Hopkins University; formerly Director of Laboratories, The Eastern Health District, Baltimore, 1940. Second edition, revised. 658 pages. 326 illustrations. W. B. Saunders Company. Price $4.00.

The author in the preface calls attention to the fact that bacteriology is no longer an exclusively medical science; that it is of tremendous practical importance in the fields of botany, physiology, agriculture, engineering and the industries. One can scarcely read a line intelligently without a knowledge of the basic principles of this field of life. The book is written from this comprehensive point of view so that the worker may be prepared to enter upon many fields of specialization. The first edition is enlarged upon and the most recent points of view stressed. Teachers of bacteriology in schools of pharmacy will find it an appealing text.

R. A. L.

PHYSIOLOGY OF MICTURITION by Orthello R. Langworthy, Lawrence C. Kalb and Lloyd G. Lewis, Sub-department of Neurology and James Buchanan, Brady Urological Institute, Johns Hopkins University. 1940. 232 pages. 49 illustrations. The Williams and Wilkins Company. Price $3.50.

A study by a group of experts of the anatomy, physiology, control by the brain, cord and sympathetic system, and the pharmacologic reactions of the bladder. Also gives the clinical diagnosis and treatment of bladder disturbances.

R. A. L.

BLOOD, HEART AND CIRCULATION edited by Forest Ray Moulton. Publications Committee—Malcom H. Soule, Charles A. Doan, William F. Hamilton, Fred M. Smith, Florence Sabin, Soma Weiss, and Carl J. Wiggens. 1940. 331 pages. Illustrated. Published by the American Association for the Advancement of Science. Price $3.25.

A symposium to which fifty-three distinguished researchers have contributed. It covers many phases of the physiology of the blood, the heart and the circulatory system, both in health and disease.

R. A. L.

PHYSIOLOGY OF THE FETUS by William Frederick Windle, Professor of Microscopic Anatomy, Northwestern University Medical School, 1940. 249 pages. 70 illustrations. W. B. Saunders Company. Price $4.50.

This is a timely book which deals with the origin and extent of function in prenatal life. This phase of physiology has been too greatly neglected in our courses when it is so important for the druggist to know the action of the drugs which he carries in his store, upon the functions and the life of the unborn.

R. A. L.

INTRODUCTORY ESSAYS ON THE HISTORY OF PHARMACY, selected and arranged by John Joseph Corcoran, College of Pharmacy, St. John's University. 1940. 175 pages, in mimeograph form. Burgess Publishing Company. Price $2.40.

A collection of articles by various authors intended to give the student a basic survey of the field of pharmacy. A book list and a bibliography of topics for historical study is appended.

R. A. L.

A LABORATORY MANUAL OF GENERAL PHYSIOLOGY by Nellie A. Hartwig, Assistant Professor in Zoology, South Dakota State College of Agriculture and Mechanic Arts. 1940. 66 pages in mimeograph form. Burgess Publishing Company. Price $1.25.

Laboratory guides for elementary courses in general physiology have never become popular because they are usually written to fit the needs and the laboratory equipment in the institution where the author is located. This manual is well written and contains a sufficient number and a wide enough range of experiments to satisfy the needs of most beginning courses in physiology. Each experiment is followed by a series of questions which, when answered by the student, will clarify the experiment and integrate the results of the experiment with the didactic instruction given in the course.

R. A. L.

MANUAL OF PRESCRIPTION WRITING by Harold N. Wright, Ph.D., Associate Professor, Department of Pharmacology, University of Minnesota. 1939. 96 pages in mimeograph. Price $1.50.

The manual covers the historical development of the prescription, the essential Latin for reading and writing, systems of weights and measures, the prescription form, legislation affecting narcotic drugs, the medico-legal aspects of the prescription, and a discussion of errors and incompatibles. A bibliography follows each chapter and an English-Latin and Latin-English vocabulary is appended.

R. A. L.

INSTITUTIONS HOLDING MEMBERSHIP IN THE ASSOCIATION

NEW YORK

University of Buffalo, School of Pharmacy, Buffalo; A. B. Lemon, Dean (1939).

Columbia University, College of Pharmacy of the City of New York, New York; Charles W. Ballard, Dean (1939).

Fordham University, College of Pharmacy, New York; James H. Kidder, Dean (1939).

Long Island University, Brooklyn College of Pharmacy, Brooklyn; Hugo H. Schaefer, Dean (1939).

NORTH CAROLINA

University of North Carolina, School of Pharmacy, Chapel Hill; J. Grover Beard, Dean (1917).

NORTH DAKOTA

North Dakota Agricultural College, School of Pharmacy, Fargo; William F. Budro, Dean, (1922).

OHIO

Ohio Northern University, College of Pharmacy, Ada; Rudolph H. Raabe, Dean (1925).

Ohio State University, College of Pharmacy, Columbus; B. V. Christensen, Dean (1909).

Western Reserve University, School of Pharmacy, Cleveland; Edward D. Davy, Acting Dean (1908).

OKLAHOMA

University of Oklahoma, School of Pharmacy, Norman; David B. R. Johnson, Dean (1905).

OREGON

Oregon State College, School of Pharmacy, Corvallis; Adolph Ziefle, Dean (1915).

North Pacific College of Oregon, School of Pharmacy, Portland; Antone O. Mickelsen, Dean (1914).

PENNSYLVANIA

Duquesne University, School of Pharmacy, Pittsburgh; Hugh C. Muldoon, Dean (1927).

Philadelphia College of Pharmacy and Science, Philadelphia; Ivor Griffith, Dean (1900).

Temple University, School of Pharmacy, Philadelphia; H. Evert Kendig, Dean (1928).

University of Pittsburgh, Pittsburgh College of Pharmacy, Pittsburgh; C. Leonard O'Connell, Dean (1900).

PHILIPPINES

University of the Philippines, College of Pharmacy, Manila; Mariano V. del Rosario, Dean (1917).

PUERTO RICO

University of Puerto Rico, College of Pharmacy, Rio Piedras; Luis Torres-Diaz, Dean (1926).

RHODE ISLAND

Rhode Island College of Pharmacy and Allied Sciences, Providence; W. Henry Rivard, Dean (1926).

SOUTH CAROLINA

Medical College of the State of South Carolina, Charleston; Robert Wilson, Dean; School of Pharmacy, Washington H. Zeigler, Director (1940).

University of South Carolina, School of Pharmacy, Columbia; Emery T. Motley, Dean (1928).

SOUTH DAKOTA

South Dakota State College, Division of Pharmacy, Brookings; Floyd J. LeBlanc, Acting Dean (1908).

TENNESSEE

University of Tennessee, School of Pharmacy, Memphis; Robert L. Crowe, Dean (1914)

TEXAS

University of Texas, College of Pharmacy, Austin; William F. Gidley, Dean (1926).

VIRGINIA

Medical College of Virginia, School of Pharmacy, Richmond; Wortley F. Rudd, Dean (1908)

WASHINGTON

University of Washington, College of Pharmacy, Seattle; Forest J. Goodrich, Dean (1906).

State College of Washington, School of Pharmacy, Pullman; P. H. Dirstine, Dean (1912).

WEST VIRGINIA

West Virginia University, College of Pharmacy, Morgantown; J. Lester Hayman, Director (1920).

WISCONSIN

University of Wisconsin, School of Pharmacy, Madison; Arthur H. Uhl, Dean (1900).